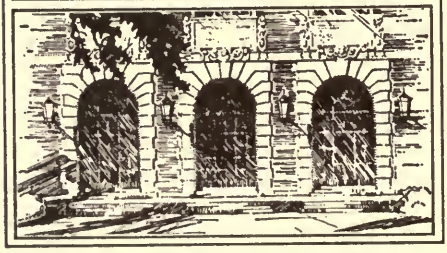

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OF
NORTH AMERICAN ARCHAEOCYATHIDS

MATTHEW H. NITECKI

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CONTENTS

ABSTRACT

This bibliographic index includes systematic and stratigraphic entries on the species of North American archaeocyathids. Each entry consists of name, reference, stratigraphic and geographic location, and number and depository of cited specimens.

Seventy-five species are recognized and distributed in twenty-six genera.

Short sections on the definition, history, affinities and classification of archaeocyathids are included.

INTRODUCTION

Preface

During the last two decades, the study of archaeocyathids, particularly in the Soviet Union, has expanded so rapidly that the literature is becoming alarmingly voluminous. The number of taxonomic groups erected is formidable. Almost 200 genera have now been named.

In North America, specimens are usually calcified in contrast to those from the Australian and Siberian platforms, where most are silicified. Because of this difference in their preservation, the phylum has been less extensively studied in America, and fewer specialists on the group have emerged. But even here 75 species are recognized.

Hoping to avoid future chaos, and in order to save later workers the time spent on library search, this bibliographic index of North American archaeocyathids has been compiled as an outgrowth of my interest in Paleozoic sponges. The first workers on the archaeocyathids included them in the Porifera; even the *Treatise on Invertebrate Paleontology* (Moore, ed., 1955) included the two phyla in a single volume. The early references on archaeocyathids inevitably came to hand during my search of the 19th century literature of sponges. Archaeocyathids possess a certain fascination, probably due to their strange and disputed position in the animal kingdom. They were among the first organisms to extract calcium carbonate from the sea, and thus are important in evolutionary history. Their unique structure and their unusually brief history provide the grounds for paleontological speculations.

I have included references to species only, since discussions of genera, as is customary in the paleontological literature, do not occur apart from descriptions of species.

The literature covered is predominantly American and Canadian. Non-American references to American species are uncommon. Many, but not all, stratigraphic entries are included. However, a special effort was made to insure the completeness of systematic papers.

Definition of archaeocyathids

Archaeocyathids are small marine benthonic organisms. In North America they are found only in the Lower Cambrian rocks, but range elsewhere into early Middle Cambrian time. They lasted about 50 million years, an extremely short time span for a taxon that was both abundant and widespread. They have been found on all continents except South America. They are extremely common in Australia and Siberia, and have been found in Antarctica.

The major North American localities are shown on the accompanying map (fig. 1). Their distribution follows well the distribution of Lower Cambrian carbonate rocks. Some forms have been described from younger Cambrian strata, but either these are now considered not to be archaeocyathids, or the stratigraphic correlation has been in error.

These organisms are of great stratigraphic value and have stimulated many important biologic discussions. They are great reef builders, associated with carbonate shelf facies, and it appears that they built their skeletal parts only of calcium carbonate. A great deal of speculative work has been done on their spatial and temporal distribution, on their ecology, anatomy, embryology, ontogeny, evolution and paleoecology. These topics are well summarized in English by Hill (1964c, 1965a).

Archaeocyathid skeletons are conical or cylindrical, with no skeletal elements in the interior. Most of the known species have a double wall with an "*intervallum*" between, although single-walled specimens are often found. The walls are perforated, and in some forms complicated skeletons have evolved. It appears that water circulation may have been somewhat similar to that of sponges. By analogy it is assumed that the path was through pores of the outer wall, the intervallum and the pores of the inner wall to the interior of the animal. There has been a great deal of speculation on the nature of the soft parts, a matter outside the scope of this paper.

Among the innovators in the construction of a carbonate skeleton, these creatures compose the earliest group known to have become extinct.

Major works on archaeocyathids

As in many fossil groups, most of the research on this phylum has been done by a small number of paleontologists. The major works on archaeocyathids fall naturally into five groups representing the

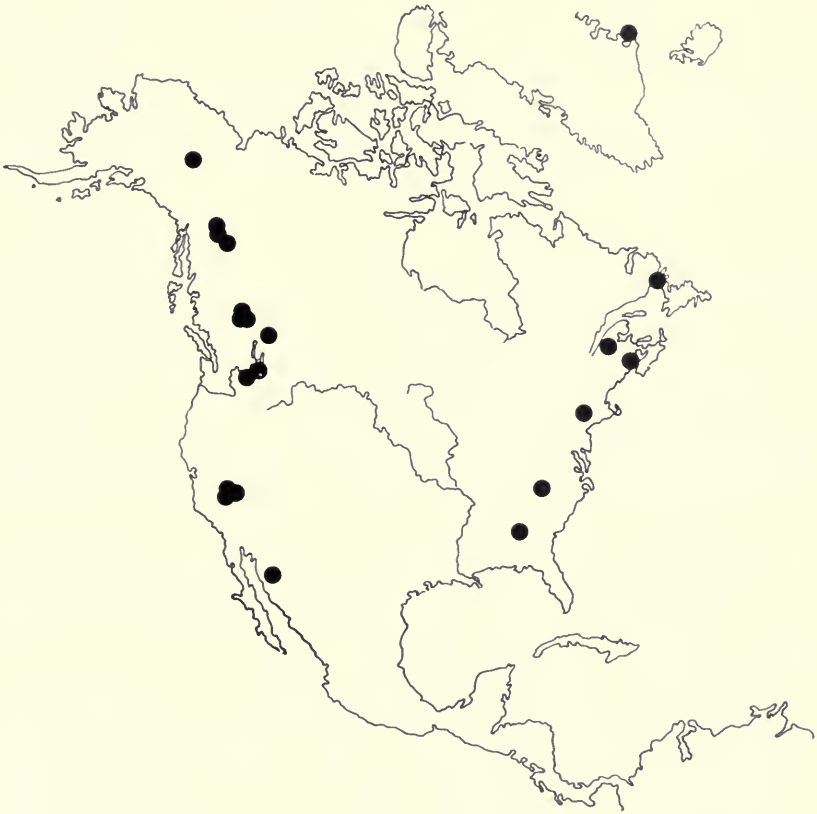

FIG. 1. Map of North America showing the major localities of Archaeocyathids.

five geographic regions of their major occurrence. These are: Russia, Australia, Antarctica, North America, and Europe–Africa.

The Russian literature dealing with the fossils of the Siberian platform, is preponderantly the work of Vologdin and Zhuravleva. The Russian work is difficult for me to evaluate becouse of the unavailability of the earlier papers and because of the characteristically short descriptions of taxonomic units. One cannot but think that too many species have been described, but this is true in many fields. Foreign collections are unavailable for study, and new species are generally erected for specimens found on different continents. Russian workers have published a great number of good speculative papers, interpreting archaeocyathid evolution, morphology and ecology.

The Australian studies stem from Taylor's (1910) excellent early account which contains clear illustrations and an imaginative scheme of classification. A series of papers (R. Bedford and W. R. Bedford, 1934, 1936, and R. Bedford and J. Bedford, 1936, 1937, 1939) was published on the taxonomy of Australian forms. They described many new taxa and proposed an outline of classification.

The fossils in Antarctica were first recovered from glacial moraines, and from sea dredging. These were monographed by Gordon (1920). It is only recently that specimens have been collected *in situ*. All the Antarctic material was worked out by Hill (1964a, b; 1965a), who contributed the most important recent papers (in English) on all aspects of archaeocyathids. Hill is now a leading student of the group who has "dallied" with them with the most "vigorous precision of scientific method" (Hill, 1965b, pp. 74, 75). Her highly imaginative and careful work reads in a way pleasantly different from the remaining sea of short descriptive notes of other authors.

The fourth group of papers deals with the fossils found in Europe (particularly Spain and Sardinia) and recently in Africa. The publications of Bornemann (1883, 1884) and Simon (1939, 1941) are faunal and systematic, while Hinde (1889) in a very important summary included all archaeocyathid knowledge up to his time.

In America the first archaeocyathid was found by Bayfield (1845). The first systematic paper was published by Elkanah Billings (1861), the distinguished Canadian paleontologist. It was he who named the genus *Archaeocyathus* and thus a hundred years later gave a name to a phylum. In the United States, Ford (1873a, b; 1878), Meek (1868), and particularly Walcott (1886–1917) described archaeocyathids from American localities. The American species in particular, and the phylum in general received a great deal of attention from Okulitch who has been working on them continuously since 1935. His well-known work together with that of his students and co-workers dominates the American literature. The present paper could not have been written without Okulitch's articles, in which most of the bibliographic references were found. Future workers will have an equally great debt to Okulitch's industry.

Affinities of archaeocyathids

Billings (1861a) in describing the first archaeocyathid species, thought that it might be a sponge or a coral. Four years later he described additional species. Because of the small number of specimens that he had, he could not have done other than to assign them

to existing and recognized phyla. He subsequently changed his mind and placed them with Protozoa.

For the same reason, namely, the lack of adequate numbers of fossils, the later workers attempted to fit them into some existing phylum. These were the grounds for affiliating them with foraminifers and other protozoans, calcareous algae, sponges, corals and other coelenterates.

Later researchers, namely, Taylor (1910), Bedford and Bedford (1936), Vologdin (1940) and Okulitch (1943), all believed strongly that archaeocyathids were an independent branch of Porifera. The difficult taxonomic position of the group was well recognized, and reflected itself by usage of terms subphylum (Okulitch) or subtype (Vologdin). Or they were considered to constitute a class of equal standing with calcareous or siliceous sponges. The uncertainty of their placement ended with the publication of Okulitch and Laubenfels (1953), where they were assigned to a phylum of their own.

The most comprehensive and the most recent classification is that of Hill (1964c, 1965a). She considers archaeocyathids "as a primitive phylum of single multicellular animals, with a level of organization lying between that of Protozoa and that of Porifera" (1964c, p. 250).

Whether or not the group can be placed between protozoans and sponges in the system of classification on the basis of the level of organization is a difficult question. The concept of "complexity" or "primitiveness" of sponges is based on studies of their cellular organization, a part of anatomy little known from fossil record. Sponges, at least on the species level, are characterized by lack of individuality. One may think of sponges as a morphologically plastic, well-adapted group. There appear, of course, to be some exceptions, and thus perhaps glass sponges may show less variation. On the other hand, protozoans do not exhibit any morphological variation on such a grand scale. I would, for the time being, prefer not to affiliate archaeocyathids with either of these two groups.

Classification of archaeocyathids

Recently E. H. McKee (1963) threw serious doubt on the classification and identification of *Ethmophyllum whitneyi*, *E. cooperi* and *Ajacicyathus nevadensis*. He has questioned the taxonomy of these three entities. While I recognize his contribution, I am unable to pass judgment, and therefore I have followed the classification of Okulitch (1943 and subsequent) and Hill (1964c, 1965a).

Hill (1964c, 1965a) divides the phylum into two classes: Regularia and Irregularia. The division is shown on Table 1.

CHARACTER	REGULARIA	IRREGULARIA
Walls	One or Two	One or Two
Radial Skeletal Elements	Rods or Septa	Rods or Taeniae or Radial Tubules
Tabulae	Present or Absent	Present or Absent
inner Wall Developed	Before Dissepiments	After Dissepiments

TABLE I. Characters used for classification of Regularia and Irregularia. (Modified after Hill, 1964c).

The following is the classification of North American archaeocyathids modified after Hill (1964c, 1965a) and Okulitch (1943–1956).

Phylum Archaeocyatha Vologdin, 1937
  Class Regularia Vologdin, 1937
    Order Monocyathida Okulitch, 1935
      Family Monocyathidae Bedford and Bedford, 1934
        Genus *Monocyathus* Bedford and Bedford, 1934
          Monocyathus Sp.
    Order Ajacicyathida Bedford and Bedford, 1939
      Family Ajacicyathidae Bedford and Bedford, 1939
        Genus *Ajacicyathus* Bedford and Bedford, 1939
          Ajacicyathus ajax (Taylor)
          Ajacicyathus argentus (Okulitch)
          Ajacicyathus clarus (Vologdin)
          Ajacicyathus nevadensis (Okulitch)
          Ajacicyathus osilinka Okulitch and Roots, 1947
          Ajacicyathus profundomimus Okulitch, 1943
          Ajacicyathus purcellensis Okulitch, 1947
          Ajacicyathus rimouski Okulitch, 1943

Family Coscinocyathidae Taylor, 1910
Genus *Coscinocyathus* Bornemann, 1884
Coscinocyathus cassiariensis Kawase and Okulitch, 1957
Coscinocyathus dentocanis Okulitch, 1943
Coscinocyathus inequivallus Kawase and Okulitch, 1957
Coscinocyathus miniporosus Bedford and Bedford, 1937
Coscinocyathus multiporosus Kawase and Okulitch, 1957
Coscinocyathus rhyacoensis Okulitch, 1948
Coscinocyathus serratus Kawase and Okulitch, 1957
Coscinocyathus tubicornus Kawase and Okulitch, 1957
Coscinocyathus veronicus Kawase and Okulitch, 1957
Coscinocyathus sp.
Genus *Coscinoptycta* Broili, 1915
Coscinoptycta sp.
Family Alataucyathidae Zhuravleva, 1955
Genus *Ethmocoscinus* Simon, 1939
Ethmocoscinus sp.
Class Irregularia Vologdin, 1937
Order Rhizacyathida Zhuravleva, 1955
Family Rhizacyathidae Bedford and Bedford, 1939
Genus *Archaeopharetra* Bedford and Bedford, 1936
Archaeopharetra typica Bedford and Bedford, 1936
Archaeopharetra sp.
Order Archaeocyathida Okulitch, 1935
Family Metacyathidae Bedford and Bedford, 1934
Genus *Dendrocyathus* Okulitch and Roots, 1947
Dendrocyathus unexpectans Okulitch and Roots, 1947
Dendrocyathus sp.
Genus *Metethmophyllum* Okulitch, 1943
Metethmophyllum labradorensis (Okulitch)
Metethmophyllum meeki (Walcott)
Metethmophyllum resseri Okulitch, 1943
Family Archaeocyathidae Hinde, 1889
Genus *Archaeocyathus* Billings, 1861
Archaeocyathus arborensis Okulitch, 1954
Archaeocyathus atlanticus Billings, 1861
Archaeocyathus borealis Okulitch, 1955
Archaeocyathus constrictus (Raymond)

Genus *Paracoscinus* Bedford and Bedford, 1936
Paracoscinus sp.
Genus *Pycnoidocoscinus* Bedford and Bedford, 1936
Pycnoidocoscinus rectiporus Okulitch, 1948
Genus *Claruscyathus* Vologdin, 1932
Claruscyathus ketzaensis Kawase and Okulitch, 1957
Claruscyathus obliquus (Okulitch)
Claruscyathus solidus Vologdin, 1937
Order Syringocnematida Okulitch, 1935
Family Syringocnematidae Taylor, 1910
Genus Syringocnema Taylor, 1910
Syringocnema colvillensis Greggs, 1959
Syringocnema sp.

GENERA OF DIFFICULT OR UNCERTAIN AFFINITIES

Genus *Atikokania* Walcott, 1912
Atikokania lawsoni Walcott, 1912
Atikokania irregularis Walcott, 1912
Genus *Exocyathus* Bedford and Bedford, 1937
Exocyathus canadensis Okulitch, 1943
Exocyathus regularis Okulitch, 1943
Genus *Haguia* Walcott, 1899
Haguia sphaerica Walcott, 1899
Genus *Matthewcyathus* Okulitch, 1940
Matthewcyathus pavonoides (Matthew)
Genus *Wilbernicyathus* Wilson, 1950
Wilbernicyathus donegani Wilson, 1950

CATALOG OF GENERA AND SPECIES

AJACICYATHUS Bedford and Bedford, 1939

Ajacicyathus ajax (Taylor)

1958. *Ajacicyathus ajax*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Ajacicyathus (*Archaeocyathus*) cf. *clarus* (Vologdin)

See: *Ajacicyathus clarus* (Vologdin)

Ajacicyathus argentus (Okulitch)

1935. *Archaeocyathus argentus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 100–101, pl. 2, fig. 6.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9325, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Ajacicyathus argentus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 57, pl. 1, fig. 6.
Lower Cambrian: Waucobian, Silver Peak, Nevada.
Holotype: 9325, Museum of Comparative Zoology, Harvard University, Cambridge, Massahusetts.

1960. *Robustocyathus argentus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 113, 134.
Lower Cambrian: North America.

Ajacicyathus clarus (Vologdin)

1943. *Ajacicyathus* (*Archaeocyathus*) cf. *clarus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 13.
Cambrian: Nevada and California.

1947. *Ajacicyathus clarus*
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake Area, British Columbia, Canada.

1947. *Ajacicyathus clarus*
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, p. 40, pl. 1, fig. 5.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake Area, British Columbia, Canada.
Referred specimens: 12762 in the collection of Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacicyathus clarus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Ajacicyathus nevadensis (Okulitch)

1935. *Archaeocyathus nevadensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 101, pl. 1, figs. 7–9; pl. 2, fig. 1g and fig. 3.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9327 in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Ajacicyathus nevadensis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 55, text-figs. 18a, b; pl. 1, figs. 1–2, 4.
Lower Cambrian: (Waucobian) at Silver Peak, Nevada, and Inyo County, California.
Holotype: 9327 in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1948. *Ajacicyathus nevadensis*
Okulitch, Jour. Paleo., **22**, p. 341, pl. 53, fig. 1.
Lower Cambrian: Donald Formation, Purcell Range, British Columbia, Canada.

1950. *Ajacicyathus nevadensis*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo Area, British Columbia, Canada.

1952. *Ajacicyathus nevadensis*
Moore *et al.*, Invertebrate fossils, figs. 3–11 (2).
Lower Cambrian: Nevada.

1952. *Ajacicyathus nevadensis*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 28, pl. 7, figs. 5, 6; pl. 9, fig. 4.
Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico, and at Silver Peak, Nevada.
Referred specimens: 111815, U. S. National Museum, Washington, D. C.

1953. *Ajacicyathus nevadensis*
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1953. *Ajacicyathus nevadensis*
Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3–9D.

1954. *Ajacicyathus nevadensis*
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 56, pl. 9, figs. 5, 6; pl. 11, fig. 4.
Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico and at Silver Peak, Nevada.
Referred specimen: 111815, U. S. National Museum, Washington, D. C.

1954. *Ajacicyathus nevadensis*
Okulitch, Jour. Paleo., **28**, pp. 293–294, pl. 28, figs. 6, 7.
Lower Cambrian: Inyo County, California.
Referred specimens: Museum of Paleontology, University of California, Berkeley.

1955. *Ajacicyathus nevadensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 49, pl. 2, fig. 2.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12360, Geological Survey of Canada, Ottawa, Canada.

1955. *Ajacicyathus nevadensis*
Okulitch, Treatise on Invertebrate Paleontology, Part E Archaeocyatha, p. E10, figs. 1, 6, 8, 9a, and 8, 9b.
Lower Cambrian: North America.

1956. *Ajacicyathus nevadensis*

Okulitch, 20 Inter. Geol. Congress, Mexico. Geol. paleont. region Caborca, norponiente Sonora, pt. 1, p. 56, pl. 9, figs. 5, 6, pl. 11, fig. 4.
Lower Cambrian: archaeocyathid reef west of Caborca, Sonora, Mexico, and at Silver Peak, Nevada.
Referred specimen: 111815, U. S. National Museum, Washington 25, D. C.

1958. *Ajicicyathus nevadensis*

Fenton and Fenton, The Fossil Book, figs. on p. 67.
Early Cambrian: Nevada.

1958. *Ajacicyathus nevadensis*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 620, 621.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek area, British Columbia, Canada.

1959. *Ajacicyathus nevadensis*

Greggs, Jour. Paleo., **33**, pp. 63–64, pl. 11, fig. 7; pl. 12, figs. 10, 11; pl. 14, fig. 6.
Lower Cambrian: Colville, Stevens County, Washington; and on the south fork of the Salmo River at the base of the Laib Group, British Columbia, Canada.
Referred specimens: CO17b-2, CL11c-6, CL7b-7 and SB-4, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.

1960. *Ajacicyathus nevadensis*

Easton, Invertebrate paleontology, p. 119, figs. 3.9 (1a, 1b).
Lower Cambrian: U.S.A.

1960. *Ajacicyathus nevadensis*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 112.
Lower Cambrian: North America.

Ajacicyathus nevadensis (Okulitch)

See also: *Ethmophyllum whitneyi*, Meek, 1868.

Ajacicyathus osilinka, Okulitch and Roots, 1947

1947. *Ajacicyathus osilinka*
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Ajacicyathus osilinka*
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 40–41, pl. 1, fig. 4.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Holotype: 12763 in the collection of the Geological Survey of Canada, Ottawa, Canada.

1950. *Ajacicyathus osilinka*
Little, Canada Geol. Surv. paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Ajacicyathus osilinka*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex, Osilinka Valley, Aiken Lake, British Columbia, Canada.

Ajacicyathus profundomimus, Okulitch, 1943

1943. *Ajacicyathus profundomimus*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 57, pl. 1, fig. 3.
Lower Cambrian: Forteau Formation, Labrador, and at Troy, New York.
Holotype: 108096, U. S. National Museum, Washington, D. C.

1946. *Ajacicyathus profundomimus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4, p. 86, pl. 6, fig. 4.
Cambrian: Labrador, Canada.

1960. *Ajacicyathus profundomimus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 113.
Lower Cambrian: North America.

Ajacicyathus purcellensis, Okulitch, 1947 (*in* Okulitch and Roots, 1947)

1943. *Ajacicyathus sp.*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 13, pl. 1, fig. 5.
Lower Cambrian: Dogtooth Range, British Columbia, Canada.
Holotype: 108118, U. S. National Museum, Washington, D. C. [now in Geological Survey of Canada, Ottawa, Canada].

1947. *Ajacicyathus purcellensis*
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Ajacicyathus purcellensis*
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 39–40, pl. 1, figs. 1–3, 12.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Referred specimens: 12758–12761, Geological Survey, Canada, Ottawa, Canada.

1948. *Ajacicyathus purcellensis*
Okulitch, Jour. Paleo., **22**, p. 342, pl. 53, figs. 2, 3.
Lower Cambrian: Donald Formation, Purcell Range, British Columbia, Canada.
Types: 108118, U. S. National Museum (now with the collection of the Geological Survey of Canada, Ottawa, Canada); 9514, Geological Survey of Canada, Ottawa, Canada, and 8, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Ajacicyathus purcellensis*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo Area, British Columbia, Canada.

1957. *Ajacicyathus purcellensis*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 915, pl. 109, fig. 1.
Lower Cambrian: (Lord's Group C sediments), Wolf Lake area, Yukon, Canada.

Referred specimens: Collection 24035 (nos. 35-Y-5, 6, 7); and specimen 13325, Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacicyathus purcellensis*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1958. *Ajacicyathus* cf. *purcellensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex. Aiken Lake, Osilinka Valley, British Columbia, Canada.

1960. *Ajacicyathus purcellensis*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 113.
Lower Cambrian: North America.

Ajacicyathus rimouski, Okulitch, 1943

1943. *Ajacicyathus rimouski*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 58, pl. 2, figs. 4, 5.
Lower Cambrian: Bic Harbour, Rimouski County, Province of Quebec, Canada.
Holotype: 108098; paratypes: 108099 at U. S. National Museum, Washington, D. C.

1945. *Ajacicyathus rimouski*
Rasetti, Natur. Canadien, **72**, p. 59.
Lower Cambrian: Sillery Formation, Bic, Quebec, Canada.

1952. *Ajacicyathus rimouski*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 28, pl. 9, fig. 5.
Lower Cambrian: west end of the Proveedora, Sonora, Mexico, and Bic Harbour, Quebec, Canada.
Referred specimen: 111823, U. S. National Museum, Washington, D. C.

1954. *Ajacicyathus rimouski*
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 57, pl. 11, fig. 5.
Lower Cambrian: west end of the Proveedora, Sonora, Mexico, and Bic Harbour, Quebec, Canada.
Referred specimen: 111823, U. S. National Museum, Washington, D. C.

1956. *Ajacicyathus rimouski*
Okulitch, 20th Int. Geol. Congress, Mexico, Geol. palent. region Caborca, norponiente Sonora, pt. 1, p. 57, pl. 11, fig. 5.
Lower Cambrian: west end of the Proveedora, Sonora, Mexico, and Bic Harbour, Quebec, Canada.
Referred specimen: 111823, U. S. National Museum, Washington 25, D. C.

1958. *Ajacicyathus rimouski*
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Ajacicyathus rimouski*
Greggs, Jour. Paleo., **33**, pp. 64–65, pl. 13, figs. 1–3.
Lower Cambrian: Colville, Washington, and (Laib Group) on the south fork of the Salmo River, British Columbia, Canada
Referred specimens: CL 6b–7; CL 7b–3; CL 3a–2.
Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.

Ajacicyathus undulatus, Okulitch, 1948

1948. *Ajacicyathus undulatus*
Okulitch, Jour. Paleo., **22**, no. 3, p. 342, pl. 53, fig. 4.
Lower Cambrian: Donald Formation, Dogtooth Mountains, Purcell Range, British Columbia, Canada.
Holotype: 9515, Geological Survey of Canada, Ottawa, Canada.

1950. *Ajacicyathus undulatus*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Ajacicyathus undulatus*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 49–50, pl. 2, fig. 9.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Referred specimen: 12361 in the collection of the Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacicyathus undulatus*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Ajacicyathus weeksi, Okulitch, 1943

1943. *Ajacicyathus weeksi*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 58, pl. 2, figs. 1–3.

Lower Cambrian: 10 miles northeast of Silver Peak, Nevada.

Holotype: 108097, U. S. National Museum, Washington D. C.

1960. *Robustocyathus weeksi*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 113, 134.

Lower Cambrian: North America.

Ajacicyathus yukonensis, Kawase and Okulitch, 1957

1957. *Ajacicyathus yukonensis*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 915–916, pl. 109, fig. 2.

Lower Cambrian: (Lord's Group C sediments), Wolf Lake area, Yukon, Canada.

Holotype: 35-Y-13.I; 13326; Collection 24035, in Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacicyathus yukonensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Ajacicyathus sp.

1950. *Ajacicyathus* sp.
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Ajacicyathus* sp.
Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3-11 G–H.
Lower Cambrian: Nevada.

1960. *Ajacicyathus*
Clark and Stearn, The Geological Evolution of North America, fig. A-6.

1962. *Ajacicyathus* sp.
Orlowski, Polska Akad. Nauk, p. 110, fig. 1.

Ajicicyathus nevadensis (Okulitch)
See: *Ajacicyathus nevadensis* (Okulitch)

ARCHAEOCYATHELLUS Ford, 1873

Archaeocyathellus (*Archaeocyathellus*) *rensselaericus* (Ford)
See: *Archaeocyathellus rensselaericus* Ford, 1873

Archaeocyathellus atreus (Walcott)
See: *Incertae sedis*

Archaeocyathellus dwighti (Walcott)

1889. *Archaeocyathus Dwighti*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889 [1890]. *Archaeocyathus* (*Archaeocyathellus*) *dwighti*
Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.
Lower Cambrian: Troy and near Greenwich, Washington County, New York.
Type: 18352, National Museum, Washington, D. C.

1890. *Archaeocyathus* (*Archaeocyathellus*) *dwighti*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 54. figs. 4, 4a.

Lower Cambrian: Troy and near Greenwich, Washington County, New York.
Type: 18352, National Museum, Washington, D. C.

1891. *Archoeocyathus dwighti*
Walcott, U. S. Geol. Surv. Bull. 81, p. 153.
Lower Cambrian: Washington County, New York.

1895. *Archaeocyathus Dwighti*
Head, Palaeozoic sponges of North America, p. 7.

1916. *Archoeocyathus dwighti*
Walcott, Smithsonian, Misc. Coll., **64**, no. 5, p. 317.
Lower Cambrian: Washington County, New York.

1943. *Archaeocyathellus dwighti*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 62, pl. 3, figs. 6, 7.
Lower Cambrian: Schodack and Greenwich, Washington County, New York.
Cotypes: 18353 and 18352, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus dwighti*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: North America.

Archaeocyathellus profundus (Billings)
See: Pycnoidocyathus profundus (Billings)

Archaeocyathellus (*Protocyathus*) *septapora* (Okulitch)
See: *Nevadacyathus septaporus* (Okulitch)

Archaeocyathellus rarus (Ford)

1878. *Protocyathus rarus*
Ford, Am. Jour. Sci. Arts, ser. 3, **15**, no. 86, art. 16, pp. 124–126, text-figs. 1a, 1b.
Cambrian: conglomerate-limestone [of the Lower Potsdam Group of Ford] at Troy, New York.
Holotype: 52 $\frac{2060}{1}$, New York State Museum, Albany, New York.

1886. *Ethmophyllum rarum*
Walcott, U. S. Geol. Surv. Bull. 30, pp. 87–89, pl. 5, figs. 2, 2a–b.

Middle Cambrian: conglomerate-limestone, on the ridge east of the city of Troy, New York.
Type: 52 $\frac{2060}{1}$, New York State Museum, Albany, New York.

1889. *Ethmophyllum rarum*
Lesley, A dictionary of the fossils of Pennsylvania, **1**, p. 227, figs. 2, 2a and 2b on p. 227.
Lower Cambrian: conglomerate-limestone ridge east of Troy, New York.

1889. *Archaeocyathus rarum*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Ethmophyllum rarum*
Miller, North American geology and palaeontology, p. 160.
Cambrian: [Upper Taconic of Miller].

1890. *Archaeocyathus* (*Archaeocyathellus*) *rarus*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 54, figs. 2, 2a–b.
Lower Cambrian: conglomerate-limestone, on the ridge east of the city of Troy, New York.
Type: 15306, National Museum, Washington, D. C.

1890. *Ethmophyllum rarum*
Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Protocyathus rarum*
Walcott, U. S. Geol. Surv. Bull. 81, p. 152.
Cambrian: near Troy, and south of Schodack landing, Columbia County, New York.

1895. *Archaeocyathus rarus*
Head, Palaeozoic sponges of North America, p. 7.

1895. *Ethmophyllum rarum*
Head, Palaeozoic sponges of North America, p. 10.

1895. *Protocyathus rarus*
Head, Palaeozoic sponges of North America, p. 11.

1910. *Archaeocyathus rarus*
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 119, fig. 26 (1).

Cambrian: North America.

1935. *Archaeocyathus rarus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 91, 99.
Lower Cambrian: Troy, New York.

1937. *Archaeocyathus rarus*
Ting, Neus Jahrb. Mineral., **78**, p. 360.

1937. *Archaeocyathus rarum*
Ting, Neus Jahrb. Mineral., **78**, text-fig. 8c.

1939. *Archaeocyathellus rarus*
Simon, Abhandl. Senckenberg. naturf. Ges., **448**, p. 34.

1939. *Protocyathus rarus*
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, p. 72.

1943. *Archaeocyathellus rarus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 63–64, pl. 3, figs. 10–13.
Lower Cambrian: ridge east of Troy, New York.
Plesiotype: 15306, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus rarus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: North America.

1965. *Protocyathus rarus*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 63, text-fig. 14.6.
Lower Cambrian: Troy, New York.

Archaeocyathellus rensselaericus (Ford)

1873. *Archoeocyathus ? Rensselaericus*
Ford, Am. Jour. Sci. Arts, ser. 3, **5**, no. 27, pp. 211–213, fig. 1.
Lower Cambrian: conglomerate-limestone and even bedded limestones of Potsdam [of Ford] Group, near Troy, New York.
Holotype: 53 $\frac{2061}{1}$, New York State Museum, Albany, New York.

1873. *Archaeocyathellus Rensselaericus*
Ford, Am. Jour. Sci. Arts, ser. 3, **6**, no. 32, pp. 135, 136.
Cambrian: Troy, New York.

1880. *Archaeocyathus Rensselaericus*
Roemer, Lethaea palaeozoica, I Theil, p. 300.
Cambrian: conglomerates of "Potsdam Group," Troy, New York.

1880. *Archoeocyathellus Rensselaericus*
Dana, Manual of geology, p. 177.
Cambrian: [Potsdam of Dana] Troy, New York.

1884. *Archaeocyathus Rensselaericus*
Bornemann, Z. dtsch. geol. Ges., **36**, p. 702.

1886. *Ethmophyllum rensselaericum*
Walcott, U. S. Geol. Surv. Bull. 30, pp. 84, 85–87, pl. 5, fig. 1f (not pl. 5, figs. 1, a–e).
Middle Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.
Okulitch, 1943, pp. 60–61, states that only pl. 5, fig. 1f is *Archaeocyathellus rensselaericus*. Specimens represented in figs. 1, 1a–e are *A. walcotti*.

1889. *Ethmophyllum rensselaericum*
Lesley, A dictionary of fossils of Pennsylvania, **1**, p. 228, figs. 1, 1a–e.
Lower Cambrian: conglomerate-limestone near Troy, New York.

1889. *Ethmophyllum Rensselaericum*
Nicholson and Lydekker, A manual of palaeontology, 3rd ed., figs. 72, A and B.
Lower Cambrian: of North America.

1889. *Archoeocyathus Rensselaericus*
Hinde, Quart. Jour. Geol. Soc. London, **45**, p. 133.
Cambrian: Nevada.

1889. *Archaeocyathus Rensselaericum*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Ethmophyllum rensselaericum*
Miller, North American geology and palaeontology, p. 160.
Cambrian: [Upper Taconic of Miller].

1890. *Ethmophyllum rensselaericum*
Ulrich, Illinois Geol. Surv., **8**, p. 240.

1891. *Archoeocyathus rensseloericum*
Walcott, U. S. Geol. Surv. Bull. 81, p. 152.
Cambrian: near Troy, and south of Schodack landing in Columbia County, New York.

1891. *Archaeocyathellus Rensselaericus*
Bornemann, Nova Acta der Ksl. Leop.-Carol. Deutschen Akad. der Natur. Bd. 56, no. 3, pp. 495–499.

1895. *Archaeocyathellus Rensselaericus*
Head, Palaeozoic sponges of North America, p. 7.

1895. *Archaeocyathus Rensselaericus*
Head, Palaeozoic sponges of North America, p. 7.

1895. *Ethmophyllum Rensselaericum*
Head, Palaeozoic sponges of North America, p. 10.

1909. *Archoeocyathus rensseloericus*
Chamberlin and Salisbury, A college text-book of geology, p. 500, figs. 376, a and b.
Cambrian.

1910. *Archoeocyathus Rensselaericus*
Taylor, Roy. Soc. S. Australia, Mem. 2, p. 64.
Cambrian: North America.

1921. *Archoeocyathus rensseloericus*
Grabau, A textbook of geology, part II, historical geology, p. 227, figs. 1009, a and b.
Cambrian.

1924. *Archoeocyathus rensseloericus*
Schuchert, A textook of geology, part II, historical geology, 2nd ed., p. 189, pl. 4, fig. 5.
Lower Cambrian.

1930. *Archoeocyathus rensseloericus*
Chamberlin *et al.*, College textbook of geology, part II, historical geology, p. 484, figs. 382, a, b.

1935. *Archaeocyathus rensselaericus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 99.
Lower Cambrian: Labrador and Nevada.

1937. *Archaeocyathus rensselaericum*
Ting, Neus Jahrb. Mineral., **78**, pp. 330, 360, text-fig. 8b.

1939. *Archaeocyathellus* (*Archaeocyathellus*) *rensselaericus*
Simon, Abhandl. Senck. natur. Ges., **448**, p. 19.

1939. *Archaeocyathellus* ? *rensselaericus*
Bedford and Bedford, Kyancutta Mus. Mem. no. 6, pp. 71–72.

1943. *Archaeocyathellus rensselaericus*
Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 60–61, pl. 3, fig. 1.
Lower Cambrian: conglomerate-limestone on ridge east of Troy, New York.

1944. *Archeocyathus rensselaericus*
Shimer and Shrock, Index fossils of North America, p. 56, pl. 17, figs. 14, 15.
Lower Cambrian: Vermont?, New York, New Jersey.

1955. *Archaeocyathellus rensselaericus*
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, p. E10.
Lower Cambrian: North America.

1959. *Archaeocyathus rensselaericus*
Stirton, Time, life and man, p. 167, fig. 91 (a).
Cambrian.

1960. *Archaeocyathellus rensselaericus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: Troy, New York.

1965. *Archaeocyathellus rensselaericus*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 63, text-fig. 14.5.
Lower Cambrian: Troy, New York.

Archaeocyathellus uniporosus Okulitch, 1943

1943. *Archaeocyathellus*? *uniporosus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 62–63, pl. 3, figs. 8–9.
Lower Cambrian: Schodack and Greenwich, Washington County, New York.

Holotype: 108100, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus? uniporosus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: North America.

Archaeocyathellus walcotti Okulitch, 1943

1886. *Ethmophyllum rensselaericum* (in part)
Walcott, U. S. Geol. Surv. Bull. 30, pp. 85–87, pl. 5, figs. 1, 1a–e.
Middle Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.

1890. *Archaeocyathus* (*Arthaeocyathellus*) *rensselaericus*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., pp. 600–601, pl. 54, figs. 1, 1a–e.
Lower Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.
Type: 15305, National Museum, Washington, D. C.

1943. *Archaeocyathellus walcotti*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 61–62, pl. 3, figs. 2–5.
Lower Cambrian: conglomeratic limestone on ridge east of Troy, New York.
Holotype: 15305a; paratypes: 15305b, c, d, e, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus walcotti*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: North America.

Archaeocyathellus sp.

1886. *Ethmophyllum* sp.
Walcott, U. S. Geol. Surv. Bull. 30, p. 87, pl. 4, fig. 2.
Middle Cambrian: conglomerate-limestone, Troy, New York.

1950. *Archaeocyathellus* sp.
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Archaeocyathellus* sp.
Shrock and Twenhofel, Principles of invertebrate paleontology, fig. 3-9C.

1958. *Archaeocyathellus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Archaeocyathellus* sp.
Greggs, Jour. Paleo., **33**, p. 65, pl. 14, fig. 8.
Lower Cambrian: Laib Group, south fork of the Salmo River, British Columbia, Canada.
Referred specimen: SC-14a, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.
(Specimen transferred to Geological Survey of Canada, Ottawa, no. 14316.)

1960. *Archaeocyathellus* sp.
Easton, Invertebrate paleontology, p. 119, fig. 3.9(3).
Lower Cambrian: USA.

Archaeocyathid
See: *Incertae sedis*

Archaeocyathina
See: *Incertae sedis*

ARCHAEOCYATHUS Billings, 1861

Archaeocyathus arborensis Okulitch, 1954

1953. *Archaeocyathus* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Archaeocyathus arborensis*
Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, figs. 1, 2.
Lower Cambrian: Inyo County, California and Silver Peak, Nevada.
Holotype: C107, University of British Columbia, Vancouver, Canada.

Other specimen: 32965, Museum of Paleontology, University of California, Berkeley, California.

1960. *Archaeocyathus arborensis*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 297.
Lower Cambrian: North America.

Archaeocyathus (*Archaeocyathellus*) *rarus* (Ford)
See: *Archaeocyathellus rarus* (Ford)

Archaeocyathus argentus Okulitch, 1935
See: *Ajacicyathus argentus* (Okulitch)

Archaeocyathus atlanticus Billings, 1861

1861. *Archeocyathus Atlanticus*
Billings, Geol. Surv. Canada, New Species of Lower Silurian Fossils, pp. 3–4, figs. 1–4 [however, fig. 4 is not *A. atlanticus*].
Lower Cambrian: Forteau Formation [Potsdam Group of Billings], Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.
Holotype: 369, Geological Survey Canada, Ottawa, Canada.

1861 [1862]. *Archeocyathus Atlanticus*
Billings, Report on the Geology of Vermont, **2**, pp. 944–945, figs. 341–343.
Lower Cambrian: Forteau Formation [Potsdam Group of Billings], Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.

1865. *Archeocyathus Atlanticus*
Billings, Geol. Surv. Canada, Palaeoz. Fossils, **1**, pp. 3–6, figs. 5a–c, also pp. 59, 355, 356.
Lower Cambrian: Forteau Formation [Potsdam of Billings], L'Anse au Loup, Straits of Belle Isle, Labrador, Canada; also Potsdam Group in Vermont.

1865. *Archoeocyathus atlanticus*
Dawson, Quart. Jour. Geol. Soc., London, **21**, p. 53.
(Cambrian): Calciferous formation at Mingan, Canada.

1865. *Archoeocyathus atlanticus*
Dawson, Canadian Natur., new ser., **2**, p. 104.
(Cambrian): Calciferous formation at Mingan, Canada.

1871. *Archeocyathus Atlanticus*
Dana, Manual of Geology, p. 186, figs. 236A (a and b).
Cambrian: [Potsdam of Dana], North Shore of the Straits of Belle Isle, Labrador, Canada.

1877. *Archeocyathus rensselaericus*
Miller, The American Palaeozoic fossils, p. 42.
Cambrian: [Lower Potsdam of Miller].

1877. *Archeocyathus atlanticus*
Miller, The American Palaeozoic fossils, p. 42.
Cambrian: [Potsdam Group of Miller].

1880. *Archaeocyathus Atlanticus*
Roemer, Lethaea palaeozoica, I Theil, p. 300.
Cambrian: "Potsdam Group," L'Anse au Loup, Belle Isle, Newfoundland and Labrador, Canada.

1880. *Archoeocyathus Atlanticus*
Dana, Manual of Geology, p. 177, figs. 261 a and b.
Cambrian: [Potsdam of Dana]; Straits of Belle Isle, Canada.

1884. *Archaeocyathus Atlanticus*
Bornemann, Z. dtsch. geol. Ges., **36**, pp. 702–703.

1886. *Archaeocyathus Atlanticus*
Walcott, U. S. Geol. Surv. Bull. 30, pp. 29, 38, 45, 50–51, 73–74, 75, 77, 78, 79, 84; pl. 2, figs. 1, 1a; pl. 3, figs. 1, 1a, b, 2, 2a.
Middle Cambrian: L'Anse au Loup, on the straits of Belle Isle, Labrador, Canada, and Silver Peak, Nevada.

1887. *Archeocyathus Atlanticus*
Walcott, Am. Jour. Sci., ser. 3, **34**, no. 200, art. 18, pp. 145–146.

1889. *Spirocyathus atlanticus*
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 136–138; pl. 5, figs. 8–10.
Cambrian: L'Anse au Loup, Labrador, Canada.
Types: in the Geological Survey of Canada, Ottawa, Canada.

1889. *Spirocyathus Atlanticus*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Archaeocyathus atlanticus*
Lesley, A dictionary of the fossils of Pennsylvania, **1**, p. 30, figs. 1, 1a, 2, 2a on p. 30.
Cambrian: L'Anse au Loup, Labrador, Canada, and Silver Peak, Nevada.
Types: in Canadian Geological Survey, Ottawa, Canada.

1889. *Spirocyathus atlanticus*
Nicholson and Lydekker, A Manual of palaeontology, 3rd ed., pp. 184–185, figs. 72C and 72D.
Lower Cambrian: Canada.

1889. *Archaeocyathus atlanticus*
Miller, North American geology and palaeontology, p. 154, figs. 89a and b.
Cambrian: [Upper Taconic of Miller].

1890. *Spirocyathus atlanticus*
Walcott, 10th Ann. Rept., Geol. Survey, p. 600, pl. 50, figs. 1, 1a–f; 2, 2a.
Lower Cambrian: on the straits of Belle Isle, Labrador, Canada, and Silver Peak, Nevada.
Referred specimen: 15301, National Museum, Washington, D. C.

1890. *Archaeocyathus atlanticus*
Ulrich, Illinois Geol. Surv., **8**, p. 240.

1891. *Spirocyathus atlanticus*
Walcott, U. S. Geol. Surv. Bull. 81, pp. 78, 319.
Cambrian: north side of the Straits of Belle Isle on the Labrador shore, at L'Anse au Loup, Labrador, Canada, and Silver Peak, Nevada.

1891. *Archaeocyathus Atlanticus*
Bornemann, Nova Acta der Ksl. Leop.-Carol., Deutschen Akad. der Naturforscher. Bd. 56, no. 3, pp. 495–499.

1895. *Spirocyathus Atlanticus*
Head, Palaeozoic sponges of North America, p. 7.

1895. *Spirocyathus Atlanticus*
Dana, Manual of Geology, 4th ed., p. 470, figs. 508–508a.
Lower Cambrian.

1906. *Archaeocyathus atlanticus*
Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.
Lower Cambrian: Silver Peak Quadrangle, Nevada.

1910. *Spirocyathus Atlanticus*
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 61, 64, 147, 150, text fig. 26(11).
Cambrian: L'Anse au Loup on the Straits of Belle Isle, Labrador, Canada.

1912. *Spirocyathus atlanticus*
Willis, U. S. Geol. Surv., Prof. Paper 71, p. 99.
Lower Cambrian: Olenellus zone at Silver Peak in Western Nevada.

1934. *Spirocyathus atlanticus*
Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.
Lower Cambrian: Forteau Formation, Forteau Bay, Labrador, Canada.

1935. *Spirocyathus atlanticus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 100.
Lower Cambrian: Labrador, Canada.

1937. *Archaeocyathus atlanticus*
Okulitch, Proc. Geol. Soc. Am., p. 358.

1937. *Archaeocyathus atlanticus*
Okulitch, Jour. Paleo, **11**, pp. 251–252.

1937. *Archaeocyathus atlanticus*
Vologdin, Problems of paleontology, pp. 453, 481.
Cambrian: Labrador, Canada.

1937. *Spirocyathus atlanticus*
Ting, Neus. Jahrb. Mineral., **78**, pp. 330, 331, 334, 368.

1939. *Archaeocyathus atlanticus*
Simon, Abhandl. Senck. naturf. Ges., **448**, pp. 20, 38.

1939. *Archaeocyathus atlanticus*
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, pp. 71, 78.

1940. *Spirocyathus atlanticus*
Vologdin, Atlas of the leading forms of the fossil faunas of the USSR, p. 45.

Lower Cambrian: "middle horizons," North America.

1940. *Archaeocyathus atlanticus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34** (abstr.), p. 159.

1940. *Archaeocyathus atlanticus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 76–78, pl. 1, figs. 1–3, 5.
Lower Cambrian: Forteau Formation, L'Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.

1940. *Archaeocyathus atlanticus*
Chi, Bull. Geol. Soc. China, **20**, no. 2, p. 129.

1943. *Archaeocyathus atlanticus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 68–70, pl. 5, figs. 1, 2; pl. 18, c.
Lower Cambrian: Forteau Formation, L'Anse au Loupe, Straits of Belle Isle, Labrador, Canada and Silver Peak region, Nevada.
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.
Referred specimen: 14688, U. S. National Museum, Washington, D. C.

1944. *Archeocyathus atlanticus*
Shimer and Shrock, Index fossils of North America, p. 56, pl. 17, figs. 6, 7.
Lower Cambrian: Forteau Formation, Labrador, Canada, and Vermont.

1948. *Archaeocyathus atlanticus*
Okulitch, Jour. Paleo., **22**, p. 344, pl. 54, figs. 1, 2.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.
Figured specimens: Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Archaeocyathus atlanticus*
Okulitch, Jour. Paleo., **24**, pp. 393–394.
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.

1950. *Archaeocyathus atlanticus*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Archaeocyathus atlanticus*
Moore *et al.*, Invertebrate fossils, figs. 3–11(1a) and (1b).
Lower Cambrian: Labrador, Canada.

1953. *Archaeocyathus atlanticus*
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Archaeocyathus atlanticus*
Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, fig. 9.
Lower Cambrian: Inyo County, California.
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1955. *Spirocyathus atlanticus*
Neaverson, Stratigraphical palaeontology, p. 158.
Cambrian: Forteau Formation, Western Newfoundland reef, Canada.

1955. *Archaeocyathus atlanticus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 53–54, pl. 3, fig. 1.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12363, Geological Survey of Canada, Ottawa, Canada.

1955. *Archaeocyathus atlanticus*
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, p. E14, figs. 11, 10a and 11, 10b.
Lower Cambrian: North America.

1958. *Archaeocyathus atlanticus*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617–618, 619, 621.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1959. *Archaeocyathus atlanticus*
Greggs, Jour. Paleo., **33**, p. 67, pl. 12, figs. 7–9; pl. 14, fig. 11.
Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada and about 1 mile north of Colville, Washington.
Referred specimens: CL 20c–3, CL 20e–2, CL 20c–2, SB-7, Paleontology Collection, University of British Columbia, Vancouver [and Geological Survey of Canada nos. 14315 and 14322, Ottawa, Canada].

1960. *Archaeocyathus atlanticus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 297.
Lower Cambrian: North America.

1962. *Archaeocyathus atlanticus*
Vologdin, Osnovy paleontologii, p. 133.
Lower Cambrian: Labrador, Canada.

1964. *Archaeocyathus atlanticus*
Hill, Trans. Royal Soc., New Zealand (Geol.), **2**, no. 9, p. 143.

1965. *Archaeocyathus atlanticus*
Hill, Trans-Antarctic Expedition 1955–1958, Scient. Rept. no. 10, p. 122, fig. 23.1.
Lower Cambrian: Labrador, Canada.
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.

Archaeocyathus cf. *atlanticus*, Billings, 1861

1932. *Spirocyathus* cf. *atlanticus*
Poulsen, Mus. Min. Geol. Univ. Copenh., Comm. Paleo., no. 44, p. 26, pl. 5, figs. 1–2; pl. 6, fig. 1.
Lower Cambrian: Ella Island Formation, south coast of Ella Island, Greenland.

1947. *Archaeocyathus* cf. *atlanticus*
Okulitch and Roots, Trans. Royal Soc. Canada, ser. 3, **41**, sec. 4, pp. 41–42, pl. 1, fig. 6.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Referred specimen: 12765, Geological Survey of Canada, Ottawa, Canada.

1956. *Archaeocyathus* cf. *atlanticus*
Poulsen, 20 Int. Geol. Congress, El Sistema Cambrico, p. 65.
Lower Cambrian: Mt. Bastion on Ella Island, East Greenland.

1957. *Archaeocyathus* cf. *A. atlanticus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 922-923, pl. 111, figs. 6, 7.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Referred specimen: 13339, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus* cf. *atlanticus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

1962. *Spirocyathus* cf. *atlanticus*
Orlowski, Polska Akad. Nauk, p. 114.
Lower Cambrian: Ella Island, Eastern Greenland.

Archaeocyathus (*Archaeocyathellus*) *atreus* Walcott, 1917
See: *Incertae sedis*

Archaeocyathus (*Archaeocyathellus*) *dwighti* Walcott, 1889
See: *Archaeocyathellus dwighti* (Walcott)

Archaeocyathus (*Archaeocyathellus*) *rarus* (Ford)
See: *Archaeocyathellus rarus* (Ford)

Archaeocyathus (*Archaeocyathellus*) *rensselaericus* Ford, 1873
See: *Archaeocyathellus walcotti* Okulitch, 1943

Archaeocyathus atreus Walcott, 1917
See: *Incertae sedis*

Archaeocyathus billingsi Walcott, 1886

See: *Archaeosycon billingsi* (Walcott)

Archaeocyathus borealis Okulitch, 1955

1955. *Archaeocyathus borealis*
Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).
Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Archaeocyathus borealis*
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, pp. 55–57, pl. 2, fig. 1.
Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.
Holotype: 12355, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus borealis*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 621.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Archaeocyathus borealis*
Greggs, Jour. Paleo., **33**, pp. 67–68, pl. 12, fig. 6; pl. 13, fig. 4.
Lower Cambrian: about 1 mile north of Colville, Washington, and McDame area, British Columbia, Canada.
Referred specimens: CL 20f-2, CL 3a-2, Paleontology Collection, University of British Columbia, Vancouver (and 14321, Geological Survey of Canada, Ottawa, Canada).

Archaeocyathus constrictus (Raymond)

1931. *Spirocyathus constrictus*
Raymond, Bull. Mus. Comp. Zool., **55**, no. 6, p. 177, pl. 2, fig. 3.
Lower Cambrian at Silver Peak, Nevada.
Holotype: 9,299; other specimen 9,313, Museum Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1935. *Spirocyathus constrictus*
Okulitch, Trans. Royal Soc. Canada, ser. 3, **29**, sec. 4, p. 100.
Lower Cambrian: Nevada.

1943. *Archaeocyathus constrictus*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 70, pl. 6, figs. 1, 2.
Lower Cambrian at Silver Peak, Nevada.
Holotype: 9299; paratype: 9313, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1960. *Archaeocyathus constrictus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 298.
Lower Cambrian: North America.

Archaeocyathus Dwighti Walcott, 1889 [1890]
See: *Archaeocyathellus dwighti* (Walcott)

Archaeocyathus gracilis (Meek)
See: *Ethmophyllum whitneyi* Meek, 1865

Archaeocyathus latus (Vologdin)

1955. *Archaeocyathus* cf. *latus*
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 54, pl. 3, fig. 3.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12364, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus* cf. *latus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Archaeocyathus loculiformis Okulitch, 1955

1955. *Archaeocyathus loculiformis*
Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).
Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Archaeocyathus loculiformis*
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, pp. 54–55, pl. 2, fig. 3.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Holotype: 12354, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus loculiformis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Archaeocyathus nevadensis Okulitch, 1935
See: *Ajacicyathus nevadensis* (Okulitch)

Archaeocyathus pavonoides Matthew, 1886
See: *Matthewcyathus pavonoides* (Matthew)

Archaeocyathus profundus Billings, 1865
See: *Pycnoidocyathus profundus* (Billings)
Pycnoidocyathus loupensis (Okulitch)

Archaeocyathus rarum (Ford)
See: *Archaeocyathellus rarus* (Ford)

Archaeocyathus rarus (Ford)
See: *Archaeocyathellus rarus* (Ford)

Archaeocyathus rensselaericus Ford, 1873
See: *Archaeocyathellus rensselaericus* (Ford)

Archaeocyathus septaporus Okulitch, 1935
See: *Nevadacyathus septaporus* (Okulitch)

Archaeocyathus (*Spirocyathus*) *yavorskii* (Vologdin)
See: *Archaeocyathus yavorskii* (Vologdin)

Archaeocyathus taeniatus Okulitch, 1948
1948. *Archaeocyathus taeniatus*
Okulitch, Jour. Paleo., **22**, pp. 344–345, pl. 54, fig. 8.

Lower Cambrian: Donald Formation, south side of Holt Creek, Dogtooth Mountains, British Columbia, Canada.
Holotype: Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Archaeocyathus taeniatus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 619.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Archaeocyathus Whitneyi (Meek)
See: *Ethmophyllum whitneyi* Meek, 1868

Archaeocyathus yavorskii (Vologdin)

1952. *Archaeocyathus yavorskii*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 31–33, pl. 10.
Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico.
Referred specimen: 111824, U. S. National Museum, Washington, D. C.

1953. *Archaeocyathus yavorskii*
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Archaeocyathus yavorskii*
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 61–62, pl. 12.
Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.
Referred specimen: 111824, U. S. National Museum, Washington, D. C.

1954. *Archaeocyathus* (*Spirocyathus*) *yavorskii*
Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, fig. 8.
Lower Cambrian: Inyo County, California.
Referred specimens: Museum of Paleontology, University of California, Berkeley, California.

1956. *Archaeocyathus yavorskii*
Okulitch, 20th Int. Geol. Congress, Mexico, Geol. Paleont. region Caborca nor-pon. Sornora, part 1, pp. 61–62, pl. 12.

Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.
Referred specimen: 111824, U. S. National Museum, Washington, D. C.

Archaeocyathus sp.

1845. *Cyathophyllum*
Bayfield, Quart. Jour. Geol. Soc. London, **1**, p. 457.
Lower Cambrian: red and white limestone on eastern point of Forteau Bay, Labrador, Canada.

1891. *Archaeocyathus* und. sp.
Walcott, U. S. Geol. Survey Bull. 81, p. 319.
Cambrian: Silver Peak, Nevada.

1895. *Archoeocyathus* sp.
Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.
Lower Cambrian: Inyo County, California.

1902. *Archaeocyathus* sp.
Frech, Lethaea palaeozoica, p. 683.
Cambrian: California and Nevada.

1906. *Archaeocyathus* undet.
Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.
Lower Cambrian: Silver Peak Quadrangle, Nevada.

1908. *Archoeocyathus* sp.
Walcott, Smithsonian Misc. Coll., **53**, no. 5, pp. 187, 188, 189.
Lower Cambrian: Silver Peak, Esmeralda County, Nevada.

1910. *Archoeocyathus*? sp.
Walcott, Smithsonian Misc. Coll., **53**, no. 6, pp. 300, 315, 323.
Lower Cambrian: Silver Spring Quadrangle, Esmeralda County, Nevada, and in Owens Valley, Inyo County, California.

1910. *Archaeocyathus* sp.
Walcott, Outlines of geologic history, pp. 31, 32.
Lower Cambrian: Silver Peak, Nevada.

1912. *Archaeocyathus* sp.
Walcott, U. S. Geol. Surv. Monogr. 51, p. 584.
Lower Cambrian: Silver Peak, Nevada.

1912. *Archaeocyathus* sp.
Willis, U. S. Geol. Survey, Prof. Paper 71, pp. 100, 101.
Lower Cambrian: Olenellus zone at Silver Peak in western Nevada.

1918. *Archaeocyathus* sp.
Kirk, U. S. Geol. Survey, Prof. Paper 110, pp. 30, 31.
Lower Cambrian: Inyo Range, California.

1932. *Archaeocyathus* sp.
Mertie, U. S. Geol. Survey Bull. 836-E, pp. 398, 401.
Lower Cambrian: Tatonduk–Nation district, east central, Alaska.

1934. *Archaeocyathus* sp.
Resser, Smithsonian Misc. Coll., **92**, no. 10, p. 7.
Lower Cambrian: town of Colville, Washington.

1937. *Archaeocyathus* sp.
Mertie, U. S. Geol. Survey Bull. 872, p. 79.
Middle Cambrian: North of Yukon River, near international boundary, Alaska.

1940. *Archaeocyathus* sp.
Butts, Va. Geol. Survey Bull. 52, pp. 47, 55, 56, 473.
Cambrian: Shady Dolomite, Appalachian Valley.

1947. *Archaeocyathus* sp.
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Archeocyathus* sp.
Campbell, Bull. Geol. Soc. Am., **58**, p. 60.
Lower Cambrian: "undifferentiated argillite" one mile north Colville, Stevens County, Washington.

1953. *Archaeocyathus* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1956. *Archaeocyathus* sp.
Okulitch, 20th Int. Geol. Congress, El Sistema Cambrico, p. 725.
Lower Cambrian: Yukon River, Alaska.

1957. *Archaeocyathus* sp.
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 923, pl. 111, fig. 8.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Referred specimen: 13340, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Archaeocyathus sp.
See: *Metethmophyllum resseri* Okulitch, 1943
Archaeocyathus arborensis Okulitch, 1954
Incertae sedis

ARCHAEOFUNGIA Taylor, 1910

Archaeofungia obliqua Okulitch, 1955

1955. *Archaeofungia obliqua*
Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).
Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Archaeofungia obliqua*
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 59, pl. 1, figs. 6, 7.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Holotype: 12353, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeofungia obliqua*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Archaeofungia sp.

1955. *Archaeofungia* sp.
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 48.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1958. *Archaeofungia* sp.
Okulitch and Greggs, Jour. Paleo., **32**, pp. 620, 621.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

ARCHAEOPHARETRA Bedford and Bedford, 1936

Archaeopharetra typica Bedford and Bedford, 1936

1958. *Archaeopharetra typica*
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Archaeopharetra typica*
Greggs, Jour. Paleo., **33**, p. 68, pl. 11, figs. 2–5.
Lower Cambrian: about 1 mile north of Colville, Washington and Salmo River, British Columbia, Canada.
Referred specimens: CL2d-1, CO18a-1, CL3b-2, CL2b-1, from Paleontology Collection, University of British Columbia, Vancouver [and 14319 and 14325, Geological Survey of Canada, Ottawa], Canada.

Archaeopharetra sp.

1953. *Archaeopharetra* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Archaeopharetra* sp.
Okulitch, Jour. Paleo., **28**, p. 293, pl. 28, fig. 3.
Lower Cambrian: Inyo County, California.
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1955. *Archaeopharetra* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 57.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12372, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeopharetra* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

ARCHAEOSYCON Taylor, 1910

Archaeosycon billingsi (Walcott)

1886. *Archoeocyathus Billingsi*
Walcott, U. S. Geol. Survey Bull. 30, pp. 29, 45, 51, 73, 74, pl. 3, figs. 3, 3a–c.
Middle Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

1889. *Archaeocyathus billingsi*
Lesley, A dictionary of the fossils of Pennsylvania, **1**, pp. 30-31, figs. 3, 3a on p. 30.
Cambrian: [Lesley's Braintree Formation].

1889. *Coscinocyathus Billingsi*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Coscinocyathus Billingsi*
Hinde, Quart. Jour. Geol. Soc. London, **45**, p. 135.
Lower Cambrian: L'Anse au Loup, Labrador, Canada.

1889. *Archaeocyathus billingsi*
Miller, North American geology and palaeontology, p. 154.
Cambrian: [Upper Taconic of Miller].

1889 [1890]. *Coscinocyathus billingsi*
Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.
Middle Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.
Type: 15302, National Museum, Washington, D. C.

1890. *Coscinocyathus billingsi*
Walcott, 10th Ann. Rept., Geol. Survey, p. 600, pl. 51, figs. 2, 2a–b.
Types: 15302, National Museum, Washington, D. C.

1890. *Archaeocyathus billingsi*
Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Archaeocyathus Billingsi*
Bornemann, Nova Acta der Ksl. Leop.—Carol. Deutschen Akad. der Naturforscher, Bd. 56, no. 3, pp. 495–499.

1895. *Archaeocyathus Billingsi*
Head, Palaeozoic sponges of North America, p. 7.

1910. *Archoeosycon Billingsi*
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 111.
Cambrian: North America.

1935. *Archaeosycon billingsi*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 100.
Lower Cambrian: Labrador, Canada.

1937. *Archaeocyathus billingsi*
Ting, Neus. Jahrb. Mineral., **78**, p. 330.

1939. *Dictyocyathus* (*Archaeosycon*) *billingsi*
Simon, Abhandl. Senck. nat. Ges., **448**, p. 45.

1939. *Archaeocyathus billingsi*
Simon, Abhandl. Senck. nat. Ges., **448**, p. 45.

1939. *Archaeosycon billingsi*
Simon, Abhandl. Senck. nat. Ges., **448**, p. 22.

1943. *Archaeosycon billingsi*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 81–82, pl. 14, figs. 2–4.
Lower Cambrian: Forteau Formation, L'Anse au Loup, Labrador, Canada.
Holotype: 15302, U. S. National Museum, Washington, D. C.

1955. *Archaeosycon billingsi*
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, pp. E16–E17, figs. 12, 7.

Archaeosycon sp.

1955. *Archaeosycon* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 49.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1958. *Archaeosycon* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Archaeosycon* sp.
Greggs, Jour. Paleo., **33**, p. 71, pl. 11, fig. 10.
Lower Cambrian: Colville, Stevens County, Washington.
Referred specimen: CL1a-2, Paleontology Collection, University of British Columbia, Vancouver, British Columbia Canada.

Archeocyathus Atlanticus Billings, 1861
See: *Archaeocyathus atlanticus*, Billings, 1861

Archeocyathus gracilis Meek, 1868
See: *Ethmophyllum whitneyi* Meek, 1868

Archeocyathus profundus Billings, 1865
See: *Pycnoidocyathus profundus* (Billings)

Archeocyathus rensselaericus (Ford)
See: *Archaeocyathellus rensselaericus* Ford, 1873

Archeocyathus Whitneyi Meek, 1868
See: *Ethmophyllum whitneyi* Meek, 1868

Archeocyathus sp.
See: *Archaeocyathus* sp.

Archoeocyathus? *pavonoides* (Matthew)
See: *Matthewcyathus pavonoides* (Matthew)

Archoeocyathus profundus Billings, 1865
See: *Pycnoidocyathus loupensis* (Okulitch)

Archoeocyathus rensseloericus (Ford)
See: *Archaeocyathellus rensselaericus* Ford, 1873

Atikokania irregularis Walcott, 1912
See: *Incertae sedis*

Atikokania lawsoni Walcott, 1912
See: *Incertae sedis*

Cambrocyathus amourensis Okulitch, 1943
See: *Pycnoidocyathus amourensis* (Okulitch)

Cambrocyathus ceratodictyoides (Raymond)
See: *Pycnoidocyathus ceratodictyoides* (Raymond)

Cambrocyathus columbianus Okulitch, 1943
See: *Pycnoidocyathus columbianus* (Okulitch)

Cambrocyathus dissepimentalis Okulitch, 1943
See: *Pycnoidocyathus dissepimentalis* (Okulitch)

Cambrocyathus donaldi Okulitch, 1948
See: *Pycnoidocyathus donaldi* (Okulitch)

Cambrocyathus cf. *donaldi* Okulitch, 1948
See: *Pycnoidocyathus* cf. *donaldi* (Okulitch)

Cambrocyathus loupensis Okulitch, 1940
See: *Pycnoidocyathus loupensis* (Okulitch)

Cambrocyathus occidentalis Okulitch, 1943
See: *Pycnoidocyathus occidentalis* (Okulitch)

Cambrocyathus cf. *C. occidentalis* Okulitch, 1943
See: *Pycnoidocyathus* cf. *occidentalis* (Okulitch)

Cambrocyathus orthocornicus Okulitch, 1943
See: *Pycnoidocyathus orthocornicus* (Okulitch)

Cambrocyathus profundus (Billings)
See: *Pycnoidocyathus profundus* (Billings)

Cambrocyathus septimus Okulitch, 1948
See: *Pycnoidocyathus septimus* (Okulitch)

Cambrocyathus sp.
See: *Pycnoidocyathus* sp.

CARINACYATHUS Vologdin, 1932

Carinacyathus perforatus Kawase and Okulitch, 1957

1957. *Carinacyathus perforatus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 922, pl. 111, figs. 1–5.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Holotype: 13336, other specimens 13337, 13338, Geological Survey of Canada, Ottawa, Canada.

1958. *Carinacyathus perforatus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

CLARUSCYATHUS Vologdin, 1932

Claruscyathus ketzaensis Kawase and Okulitch, 1957

1957. *Claruscyathus ketzaensis*
Kawase and Okulitch, Jour. Paleo., **31**, pp. 928–929, pl. 113, figs. 13–16.
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.
Holotype: AP-2; other specimens: AP-1, 3, 4, 81, 811, 8, 10 and 11, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Claruscyathus ketzaensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

Claruscyathus obliquus (Okulitch)

1948. *Eucyathus obliquus*
Okulitch, Jour. Paleo., **22**, pp. 347–348, pl. 55, figs. 4, 5.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.

Holotype: 13 in Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Eucyathus* cf. *obliquus*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Claruscyathus obliquus*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Claruscyathus solidus Vologdin, 1937

1958. *Claruscyathus solidus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Claruscyathus solidus*
Greggs, Jour. Paleo., **33**, pp. 71–72, pl. 11, figs. 6, 8, 9, 11, 12.
Lower Cambrian: about 1 mile north of Colville, Washington.
Referred specimens: CL 11b-3, CL 10b-4, CL 9b-6, CL 9b-9, CL 2d-7, Paleontological Collection, University of British Columbia, Vancouver, British Columbia (and 14323, Geological Survey of Canada, Ottawa, Canada).

COPLEICYATHUS Bedford and Bedford, 1937

Copleicyathus laminosis Okulitch, 1948
See: *Copleicyathus laminosus* Okulitch, 1948

Copleicyathus laminosus Okulitch, 1948

1948. *Copleicyathus laminosus*
Okulitch, Jour. Paleo., **22**, p. 345, pl. 55, fig. 6.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.
Holotype: 14, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Copleicyathus laminosis*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Copleicyathus? laminosus*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

COSCINOCYATHUS Bornemann, 1884

Coscinocyathus billingsi (Walcott)
See: *Archaeosycon billingsi* (Walcott)

Coscinocyathus cassiarensis Kawase and Okulitch, 1957
See: *Coscinocyathus cassiariensis* Kawase and Okulitch, 1957

Coscinocyathus cassiariensis Kawase and Okulitch, 1957

1957. *Coscinocyathus cassiariensis*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 917–918, pl. 109, figs. 10–13.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake Area, Yukon, Canada.
Holotype: 13330; other specimens: 13331, 13332, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus cassiarensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Coscinocyathus dentocanis Okulitch, 1943

1943. *Coscinocyathus dentocanis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 67–68, pl. 4, fig. 2.
Lower Cambrian: Donald Formation, Dogtooth Range, Canyon Creek near Golden, British Columbia, Canada.

Holotype: 108101, U. S. National Museum, Washington, D. C.
Other specimens: 9516, Geological Survey of Canada, Ottawa, Canada.

1948. *Coscinocyathus dentocanis*
Okulitch, Jour. Paleo., **22**, no. 3, pp. 342–343, pl. 53, fig. 5.
Lower Cambrian: Donald Formation, Dogtooth Mountain, Canyon Creek, near Golden, British Columbia, Canada.
Holotype: 9516, Geological Survey of Canada, Ottawa, Canada.

1950. *Coscinocyathus dentocanis*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Coscinocyathus dentocanis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 51–53, pl. 3, figs. 5–7.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimens: 12359, 12367, 12368 in the Geological Survey of Canada, Ottawa, Canada.

1957. *Coscinocyathus dentocanis*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 916–917, pl. 109, figs. 4–6.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Referred specimens: 13327, 13328 and collections nos. 24040 and 24041, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus dentocanis*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1960. *Coscinocyathus dentocanis*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 253.
Lower Cambrian: North America.

Coscinocyathus inequivallus Kawase and Okulitch, 1957

1957. *Coscinocyathus inequivallus*
Kawase and Okulitch, Jour. Paleo., **31**, pp. 918–920, pl. 110, figs. 1–6.
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.
Holotype: AP-14; other specimens: AP-13, 15, 16, 19, and 21, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus inequivallus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

Coscinocyathus cf. *miniporosus* Bedford and Bedford, 1937

1950. *Coscinocyathus* cf. *miniporosus*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Coscinocyathus* cf. *miniporosus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Coscinocyathus multiporosus Kawase and Okulitch, 1957

See: *Coscinocyathus multiporus* Kawase and Okulitch, 1957

Coscinocyathus multiporus Kawase and Okulitch, 1957

1957. *Coscinocyathus multiporus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 917, pl. 109, figs. 7–9.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.

Holotype: 13329, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus multiporosus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Coscinocyathus rhyacoensis Okulitch, 1948

1948. *Coscinocyathus rhyacoensis*
Okulitch, Jour. Paleo., **22**, p. 343, pl. 53, figs. 7, 8.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.
Holotype: 7, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus rhyacoensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 619.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Coscinocyathus serratus Kawase and Okulitch, 1957

1957. *Coscinocyathus serratus*
Kawase and Okulitch, Jour. Paleo., **31**, p. 920, pl. 110, figs. 7, 9.
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.
Holotype: AP-17, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus serratus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

Coscinocyathus tubicornis Kawase and Okulitch, 1957

See: *Coscinocyathus tubicornus* Kawase and Okulitch, 1957

Coscinocyathus tubicornus Kawase and Okulitch, 1957

1957. *Coscinocyathus tubicornus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 921, pl. 110, figs. 10, 11.
Lower Cambrian: 1 mile due NE of northeast end Crescent Lake, lat. 60°12′30″, long. 131°11′30″, Wolf Lake area, Yukon, Canada.

Holotype: 13334; other specimen 24036, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus tubicornis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Coscinocyathus veronicus Kawase and Okulitch, 1957

1957. *Coscinocyathus veronicus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 920–921, pl. 110, fig. 8.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Holotype: 13333; other specimens: collection nos. 24040 and 24041, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus veronicus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Coscinocyathus sp.

1895. *Coscinocyathus* sp.
Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.
Lower Cambrian: Inyo County, California.

1902. *Coscinocyathus* sp.
Frech, Lethaea palaeozoica, p. 683.
Cambrian: California and Nevada.

1912. *Coscinocyathus* sp.
Willis, U. S. Geol. Surv., Prof. Paper 71, p. 100.
Lower Cambrian: Olenellus zone at Silver Peak, in western Nevada.

1943. *Coscinoyathus* sp.
Okulitch, Geol. Soc. Am., Special Papers, 48, p. 67, pl. 4, figs. 5–7.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Shady Formation, Georgia and Virginia.
Referred specimens: 108125, 108107, U. S. National Museum, Washington, D. C., and 9517, Geological Survey of Canada, Ottawa, Canada.

1947. *Coscinocyathus* sp.
Okulitch and Roots, Proc. Roy. Soc. Canada, **41**, ser. 3, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Coscinocyathus* sp.
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, p. 41, pl. 1, fig. 11.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Referred specimen: 12764 in the collection of the Geological Survey of Canada, Ottawa, Canada.

1948. *Coscinocyathus* sp.
Okulitch, Jour. Paleo., **22**, no. 3, p. 343, pl. 53, fig. 6.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Figured specimen: 9517, Geological Survey of Canada, Ottawa, Canada.

1950. *Coscinocyathus* sp.
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Coscinocyathus* sp.
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 31, pl. 9, figs. 1A, 2.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111820, U. S. National Museum, Washington, D. C.

1954. *Coscinocyathus* sp.
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 60, pl. 11, figs. 1A, 2.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111820, U. S. National Museum, Washington, D. C.

1955. *Coscinocyathus* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 53.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1956. *Coscinocyathus* sp.

Okulitch, 20th Int. Geol. Congress Mexico, geologia y paleont. region Caborca nor-pon. Sonora, pt. 1, p. 60, pl. 11, figs. 1A, 2.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.

Referred specimen: 111820, U. S. National Museum, Washington, D. C.

1957. *Coscinocyathus* sp.

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 921–922, pl. 110, fig. 12.

Lower Cambrian: 1 mile due NE of northeast end of Crescent Lake, lat. 60°12′30″, long. 131°11′30″, Wolf Lake area, British Columbia, Canada.

Referred specimen: 13335, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1960. *Coscinocyathus*

Clark and Stearn, The Geological Evolution of North America, fig. 15-10.

Coscinoptycha sp.

See: *Coscinoptycta* Broili, 1915

COSCINOPTYCTA Broili, 1915

Coscinoptycta sp.

1956. *Coscinoptycha* sp.
Okulitch, 20th Int. Geol. Congress, El Sistema Cambrico, p. 725.
Lower Cambrian: Yukon River, Alaska.

Cyathophyllum sp.

See: *Archaeocyathus* sp.

DENDROCYATHUS Okulitch and Roots, 1947

Dendrocyathus inexpectans Okulitch and Roots, 1947

See: *Dendrocyathus unexpectans* Okulitch and Roots, 1947

Dendrocyathus unexpectans Okulitch and Roots, 1947

1947. *Dendrocyathus inexpectans*
Okulitch and Roots, Proc. Roy. Soc. Canada, **41**, ser. 3, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Dendrocyathus unexpectans*
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 44–45, pl. 1, figs. 10, 13.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Holotype: 12769 in the collection of Geological Survey of Canada, Ottawa, Canada.

1955. *Dendrocyathus unexpectans*
Okulitch, Treatise on Invertebrate Paleontology, Pt. E, Archaeocyatha, p. E16, fig. 11, 1.
Lower Cambrian: British Columbia, Canada.

1958. *Dendrocyathus unexpectans*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Dendrocyathus sp.

1958. *Dendrocyathus* sp.
Okulitch and Greggs, Jour. Paleo, **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Wash.

1959. *Dendrocyathus* sp.
Greggs, Jour. Paleo., **33**, p. 71.
Lower Cambrian: Colville, Stevens County, Washington.

Dictyocyathus (*Archaeosycon*) *billingsi* (Walcott)
See: *Archaeosycon billingsi* (Walcott)

Erimophyllum profundum (Billings)
See: *Pycnoidocyathus profundus* (Billings)

ETHMOCOSCINUS Simon, 1939

Ethmocoscinus sp.

1957. *Ethmocoscinus* (?) sp.
Kawase and Okulitch, Jour. Paleo., **31**, p. 916, pl. 109, fig. 3.
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.
Referred specimen: AP7, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Ethmocoscinus* (?) sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

ETHMOPHYLLUM Meek, 1868

Ethmophyllum americanum Okulitch, 1952

1950. *Ethmophyllum americanum*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Ethmophyllum americanum*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 30–31, pl. 7, figs. 3, 4.

Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.
Holotype: 111816, U. S. National Museum, Washington, D. C.

1954. *Ethmophyllum americanum*
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 59–60, pl. 9, figs. 3, 4.
Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.
Holotype: 111816, U. S. National Museum, Washington, D. C.

1956. *Ethmophyllum americanum*
Okulitch, 20th Int. Geol. Congress, Mexico Geol. paleont., region Caborca norponiente Sonora, pt. 1, pp. 59–60, pl. 9, figs. 3, 4.
Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.
Holotype: 111816, U. S. National Museum, Washington, D. C.

1958. *Ethmophyllum americanum*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Ethmophyllum americanum*
Greggs, Jour. Paleo., **33**, p. 66, pl. 13, fig. 11; pl. 14, figs. 5, 12.
Lower Cambrian: about 1 mile north of Colville, Washington, and Laib Group, south fork of Salmo River, British Columbia, Canada.
Referred specimens: CL 20e-9, SC-7, in the Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada (and 14316, 14322 in Geological Survey of Canada, Ottawa, Canada).

Ethmophyllum cf. *americanum* Okulitch, 1952

1959. *Ethmophyllum* sp. cf. *E. americanum*
Greggs, Jour. Paleo., **33**, p. 66, pl. 14, figs. 9, 12.

Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada.
Referred specimens: SC-12; SK-3 in the Paleontology Collection, University of British Columbia, Vancouver (and 14316 in the Geological Survey of Canada, Ottawa, Canada).

Ethmophyllum ceratodictoides Raymond, 1931
See: *Pycnoidocyathus ceratodictyoides* (Raymond)

Ethmophyllum ceratodictyoides Raymond, 1931
See: *Pycnoidocyathus ceratodictyoides* (Raymond)

Ethmophyllum cooperi Okulitch, 1952

1952. *Ethmophyllum cooperi*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 29–30, pl. 7, figs. 1, 2; pl. 9, fig. 4.
Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico.
Holotype: 111814; other specimen 111814a, U. S. National Museum, Washington, D. C.

1954. *Ethmophyllum cooperi*
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 58–59, pl. 9, figs. 1, 2; pl. 11, fig. 4.
Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.
Holotype: 111814; other specimen 111814a in U. S. National Museum, Washington, D. C.

1956. *Ethmophyllum cooperi*
Okulitch, 20th Int. Geol. Congress, Mexico, Geol. paleont., region de Caborca norponiente de Sonora, pt. 1, pp. 58–59, pl. 9, figs. 1, 2; pl. 11, fig. 4.
Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.
Holotype: 111814; other specimen 111814a in U. S. National Museum, Washington, D. C.

See also: *Ethmophyllum whitneyi* Meek, 1868

Ethmophyllum gracile Meek, 1868
See: *Ethmophyllum whitneyi* Meek, 1868

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimens: 12370, 12371, Geological Survey of Canada, Ottawa, Canada.

1958. *Ethmophyllum* cf. *ratam*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Ethmophyllum rensselaericum (Ford)
See: *Archaeocyathellus rensselaericus* Ford, 1873

Ethmophyllum whitneii Meek, 1868
See: *Ethmophyllum whitneyi* Meek, 1868

Ethmophyllum whitneyi Meek, 1868

1868. *Ethmophyllum Whitneyi*
Meek, Am. Jour. Sci. Arts, ser. 2, **45**, pp. 62–64.
Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868. *Ethmophyllum gracile*
Meek, Am. Jour. Sci. Arts, ser. 2, **45**, p. 64.
Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868 [1869]. *Archeocyathus Whitneyi*
Meek, Am. Jour. Sci. Arts, ser. 2, **46**, no. 136, p. 144.
Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868 [1869]. *Archeocyathus gracilis*
Meek, Am. Jour. Sci. Arts, ser. 2, **46**, no. 136, p. 144.
Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1877. *Ethmophyllum whitneyi*
Miller, The American palaeozoic fossils, p. 53.
Cambrian: [Upper Silurian of Miller].

1877. *Ethmophyllum gracile*
Miller, The American palaeozoic fossils, p. 53.
Cambrian: [Upper Silurian of Miller].

1886. *Ethmophyllum whitneyi*
Walcott, U. S. Geol. Surv., Bull. 30, pp. 81–84, pl. 4, figs. 1, 1a–h.
Middle Cambrian: Silver Peak, Western Nevada.

Remarks: Okulitch, 1943, p. 66, states that only pl. 4, figs. 1, 1b and 1c are *E. whitneyi*; figs. 1h, 1d and 1e are *E. meeki*; and 1a, 1f and 1g are of another genus and species.

1887. *Ethmophyllum Whitneyi*
Walcott, Am. Jour. Sci., ser. 3, **34**, no. 200, art. 18, pp. 145–146.

1888. *Archoeocyathus Whitneyi*
Hinde, Geol. Mag., ser. 3, **5**, p. 228.

1889. *Ethmophyllum Whitneyi*
Nicholson and Lydekker. A manual of palaeontology, 3rd ed., pp. 183–184.
Lower Cambrian: Nevada.

1889. *Ethmophyllum Whitneyi*
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 133–134, pl. 5, fig. 7.
Cambrian: Nevada.

1889. *Ethmophyllum Whitneyi*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Ethmophyllum whitneyi*
Miller, North American geology and palaeontology, p. 160.
Cambrian: [Upper Taconic of Miller].

1890. *Ethmophyllum whitneyi*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 55, figs. 1, 1b and 1c.
Lower Cambrian: Silver Peak, Western Nevada.
Types: 15307, National Museum, Washington, D. C.

1890. *Ethmophyllum whitneyi*
Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Ethmophyllum whitneyi*
Walcott, U. S. Geol. Surv. Bull. 81, pp. 165, 169, 319.
Cambrian: Silver Peak, Nevada.

1891. *Archaeocyathus Whitneyi*
Bornemann, Nova Acta der Ksl. Leop.-Carol. Deutschen Acad. der Naturforscher. Bd. 56, no. 3, pp. 495–499.

1895. *Ethmophyllum Whitneyi*
Head, Palaeozoic sponges of North America, p. 10.

1895. *Ethmophyllum gracilis*
Head, Palaeozoic sponges of North America, p. 10.

1895. *Archaeocyathus gracilis*
Head, Palaeozoic sponges of North America, p. 7.

1895. *Ethmophyllum whitneii*
Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.
Lower Cambrian: Inyo County, California.

1902. *Ethmophyllum Whitneyi*
Frech, Lethaea palaeozoica, p. 683.
Cambrian: California and Nevada.

1906. *Ethmophyllum whitneyi*
Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.
Lower Cambrian: Silver Peak Quadrangle, Nevada.

1908. *Ethmophyllum gracile*
Walcott, Smithsonian Misc. Coll., **53**, no. 5, p. 187.
Lower Cambrian: Silver Peak, Esmeralda County, Nevada.

1910. *Ethmophyllum Whitneyi*
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 61, figs. 26 (6), 26 (9) and 26 (10).
Cambrian: Nevada.

1912. *Ethmophyllum whitneyi*
Willis, U. S. Geol. Surv., Prof. Paper 71, pp. 99, 100, 101.
Lower Cambrian: Olenellus zone at Silver Peak, in Western Nevada.

1918. *Ethmophyllum gracile*
Kirk, U. S. Geol. Surv., Prof. Paper 110, pp. 30, 31.
Lower Cambrian: Inyo Range, California.

1935. *Ethmophyllum whitneyi*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 100, pl. 2, fig. 3.
Lower Cambrian: Nevada.

1935. *Ethmophyllum whitneyi*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 106, pl. 2, fig. 3.
Lower Cambrian: Silver Peak, Nevada.

1937. *Ethmophyllum whitneyi*
Ting, Neus. Jahrb. Mineral., **78**, p. 365, text-fig. 8d.

1937. *Ethmophyllum whitneyi*
Vologdin, Problems of paleontology, pp. 453, 481.
Cambrian: Nevada.

1937. *Ethmophyllum whitneyi*
Okulitch, Proc. Geol. Soc. Am., p. 358.

1939. *Ethmophyllum whitneyi*
Simon, Abhandl. Senck., nat. Ges., **448**, p. 29.

1939. *Ethmophyllum whitneyi*
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, p. 71.

1943. *Ethmophyllum whitneyi*
Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 65–67, pl. 3, figs. 15a–c; pl. 4, figs. 1, 3, 4, 8.
Lower Cambrian: Silver Peak district, Nevada.
Referred specimens: 15307, U. S. National Museum, Washington, D. C.

1944. *Ethmophyllum whitneyi*
Shimer and Shrock, Index fossils of North America, p. 57, pl. 17, fig. 19.
Lower Cambrian: Nevada.

1950. *Ethmophyllum whitneyi*
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Ethmophyllum whitneyi*
Moore *et al.*, Invertebrate fossils, figs. 3–11 (3a) and (3b).
Lower Cambrian: Nevada.

1952. *Ethmophyllum whitneyi*
Okulitch, Smithsonian Misc. Coll., **119**, pp. 28–29, pl. 8, figs. 3–5.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico; and Silver Peak district, Nevada.
Referred specimens: 111818 a–c, U. S. National Museum, Washington, D. C.

1953. *Ethmophyllum whitneyi*
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Ethmophyllum whitneyi*
Okulitch, Univ. Nac. Autonoma, Mexico Bull. 58, pp. 57–58, pl. 10, figs. 3–5.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico; and Silver Peak district, Nevada.
Referred specimens: 111818 a–c, U. S. National Museum, Washington, D. C.

1954. *Ethmophyllum whitneyi*
Okulitch, Jour. Paleo., **28**, p. 294.
Lower Cambrian: Inyo County, California.
Referred specimens: Museum of Paleontology, University of California, Berkeley, California.

1955. *Ethmophyllum whitneyi*
Okulitch, Treatise on Invertebrate Paleontology, pt. E Archaeocyatha, p. E12, figs. 9, 2 and 4A.
Lower Cambrian: Nevada.

1956. *Ethmophyllum whitneyi*
Okulitch, 20th Int. Geol. Congress Mexico, geol. paleont. region Caborca norponiente Sonora, pt. 1, pp. 57–58, pl. 10, figs. 3–5.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico; and Silver Peak district, Nevada.
Referred specimens: 111818 a–c, U. S. National Museum, Washington, D. C.

1958. *Ethmophyllum whitneyi*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 620.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

1958. *Ethymophyllum whitneyi*
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Ethmophyllum whitneyi*
Greggs, Jour. Paleo., **33**, p. 66, pl. 13, figs. 7, 8; pl. 14, figs. 7, 10.
Lower Cambrian: about 1 mile north of Colville, Washington; and Laib Group at the South Fork of the Salmo River, British Columbia, Canada.

Referred specimens: CL-10b-6, CL-5a-2, SK-1, SA-10, Paleontology Collection, University of British Columbia, Vancover, Canada (and 14323 in the Geological Survey of Canada, Ottawa, Canada).

1960. *Ethmophyllum whitneyi*
Easton, Invertebrate paleontology, p. 119, fig. 3.9 (8).
Lower Cambrian: U.S.A.

1960. *Ethmophyllum whitneyi*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 163.
Lower Cambrian: Silver Peak, Nevada.

1962. *Ethmophyllum whitneyi*
Vologdin, Osnovy paleontologii, pp. 121–122.
Lower Cambrian: Nevada.

1963. *Ethmophyllum whitneyi*
McKee, Jour. Paleo., **37**, pp. 287–293, text-figs. 1–4.
Lower Cambrian: 150 feet above the base of the Poleta Formation, Last Chance Range, California.

1963. *Ethmophyllum cooperi*
McKee, Jour. Paleo., **37**, pp. 287–293, text-figs. 1–4.
Lower Cambrian: 150 feet above the base of Poleta Formation, Last Chance Range, California.

1963. *Ajacicyathus nevadensis*
McKee, Jour. Paleo., **37**, pp. 287–293, text-figs. 1–4.
Lower Cambrian: 150 feet above the base of the Poleta Formation, Last Chance Range, California.

1965. *Ethmophyllum whitneyi*
Hill, Trans-Antarctic Expedition 1955–1958. Sci. Rept. no. 10, pp. 72–73, text-figs. 16.1a–c; pl. 4, figs. 1a–d.
Lower Cambrian: Silver Peak, Nevada.
Type specimens: 15307 in U. S. National Museum, Washington, D. C.

See also: *Incertae sedis*

Ethmophyllum cf. *whitneyi* Meek, 1868

1910. *Ethmophyllum* cf. *whitneyi*
Walcott, Outlines of geologic history, pp. 31, 32.
Lower Cambrian: Silver Peak, Nevada.

Ethmophyllum sp.

1932. *Ethmophyllum* sp.
Mertie, U. S. Geol. Surv. Bull. 836-E, pp. 398, 401.
Lower Cambrian: Tatonduk–Nation district, east central, Alaska.

1935. *Ethmophyllum*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 106, pl. 1, fig. 1.

1937. *Ethmophyllum* sp.
Mertie, U. S. Geol. Surv. Bull. 872, p. 79.
Middle Cambrian: north of Yukon River, near international boundary, Alaska.

1950. *Ethmophyllum* sp.
Little, Canada Geol. Surv., Paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Ethmophyllum* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 48.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1956. *Ethmophyllum* sp.
Okulitch, 20th Int. Geol. Congress, El Sistema, Cambrico, p. 725.
Lower Cambrian: Yukon River, Alaska.

1958. *Ethmophyllum* sp.
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 621.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

See also: *Incertae sedis*

Ethymophyllum whitneyi Meek, 1868
See: *Ethmophyllum whitneyi* Meek, 1868

Eucyathus obliquus Okulitch, 1948
See: *Claruscyathus obliquus* (Okulitch)

EXOCYATHUS Bedford and Bedford, 1937

Exocyathus canadensis Okulitch, 1943

1943. *Exocyathus canadensis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 83–84, pl. 14, fig. 5; pl. 16, fig. 1; pl. 17, fig. 1.
Lower Cambrian: Forteau Formation, Point Amour and Anse au Loup, Labrador, Canada.
Cotypes: 17048 and 17049, Peabody Museum, Yale University, New Haven, Connecticut, and 25639, 25643 and 25645, Royal Ontario Museum, Toronto, Canada.

1946. *Exocyathus canadensis*
Okulitch, Jour. Paleo., **20**, pp. 275–276, pl. 41, fig. 1.
Lower Cambrian: Point Amour, Labrador, Canada.
Referred specimen: 25643, Peabody Museum, Yale University, New Haven, Connecticut. Thin section, 67, Royal Ontario Museum of Paleontology, Toronto, Canada.

Exocyathus regularis Okulitch, 1943

1943. *Exocyathus regularis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 84, pl. 15, figs. 3, 4.
Lower Cambrian: Point Amour, Labrador, Canada.
Holotype: 17047, Peabody Museum, Yale University, New Haven, Connecticut.
Referred specimens: 25641, Royal Ontario Museum, Toronto, Canada.

Haguia sphaerica Walcott, 1899
See: *Incertae sedis*

LOCULICYATHUS Vologdin, 1931

Loculicyathus ellipticus Kawase and Okulitch, 1957

1957. *Loculicyathus ellipticus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 926–927, pl. 113, figs. 1–6.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake Area, Yukon, Canada.

Holotype: 13347, other specimens: 13348, 13349, Geol. Survey of Canada, Ottawa, Canada.

1958. *Loculiformis ellipticus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Loculiformis ellipticus Kawase and Okulitch, 1957
See: *Loculicyathus ellipticus* Kawase and Okulitch, 1957

MATTHEWCYATHUS Okulitch, 1940

Matthewcyathus pavonoides (Matthew)

1886. *Archeocyathus? pavonoides*
Matthew, Trans. Roy. Soc. Canada, **3**, sec. 4, pp. 29–30, pl. 5, figs. 1a–d.
St. John Group; in greyish-grey shale of Div. 1c., Hanford Brook, St. Martin's, Canada.

1889. *Archaeocyathus? pavonoides*
Walcott, Am. Jour. Sci., **38**, p. 35.

1890. *Archaeocyathus? pavonoides*
Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Archoeocyathus? pavonoides*
Walcott, U. S. Geol. Surv. Bull. 81, p. 83.
Cambrian: St. John Group, New Brunswick, Canada.

1892. *Archaeocyathus(?) pavonoides*
Matthew, Nat. Hist. Soc. Bull., no. 10, p. V.
Cambrian: St. John Group, division C, near St. John, New Brunswick, Canada.

1895. *Archaeocyathus pavonoides*
Head, Palaeozoic sponges of North America, p. 7.

1940. *Matthewcyathus povanoides*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34** (abstr.), p. 159.

1940. *Matthewcyathus pavonoides*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 83–86, pl. 3, figs. 4, 5.

Middle Cambrian: division 1c at Hanford Brook, New Brunswick, Canada.
Holotype: 242, in Royal Ontario Museum of Paleontology, Toronto, Ontario, Canada.

1943. *Matthewcyathus pavonoides*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 85–86, pl. 14, fig. 6; pl. 15, fig. 5.
Middle Cambrian: division 1c, Hanford Brook, St. Martin's, New Brunswick, Canada.
Referred specimen: 7872, Royal Ontario Museum, Toronto, Ontario, Canada.

1960. *Matthewcyathus povanoides*
Zhuravleva, Arkheotsiaty, Sibirskoi platformy, p. 303.

1965. *Matthewcyathus pavonoides*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 141.
Middle Cambrian: from division 1c, Hanford Brook, St. Martin's, New Brunswick, Canada.
Holotype: 7872, Royal Ontario Museum of Paleontology, Toronto, Canada.

Matthewcyathus povanoides (Matthew)
See: *Matthewcyathus pavonoides* (Matthew)

METACOSCINUS Bedford and Bedford, 1934

Metacoscinus deasensis Okulitch, 1955

1955. *Metacoscinus deasensis*
Okulitch, Proc. Roy. Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).
Lower Cambrian: Atan Group; McDame area, Northern British Columbia, Canada.

1955. *Metacoscinus deasensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 62–63, pl. 1, figs. 3, 4.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Holotype: 12358, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus deasensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Metacoscinus gabrielensis Okulitch, 1955
See: *Metacoscinus gabrielsensis* Okulitch, 1955

Metacoscinus gabrielsensis Okulitch, 1955

1955. *Metacoscinus gabrielsensis*
Okulitch, Proc. Roy. Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).
Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Metacoscinus gabrielsensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 61–62, pl. 1, figs. 1, 2, 5.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Holotype: 12357, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus gabrielensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Metacoscinus poolensis Kawase and Okulitch, 1957

1957. *Metacoscinus poolensis*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 927–928, pl. 113, figs. 7–11.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake Area, Yukon, Canada.
Holotype: 13350, other specimens 13351, 13352, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus poolensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Metacoscinus sp.

1957. *Metacoscinus* sp.
Kawase and Okulitch, Jour. Paleo., **31**, p. 928, pl. 113, fig. 12.
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.
Referred specimen: AP-6, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Metacoscinus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

METETHMOPHYLLUM Okulitch, 1943

Metethmophyllum labradorensis (Okulitch)

1935. *Ethmophyllum labradorensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 102–103, pl. 2, fig. 7.
Lower Cambrian: Point Amour and Loup Bay, Labrador, Canada.
Holotype: 9329, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Metethmophyllum labradorensis*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 80, pl. 13, fig. 4.
Lower Cambrian: Forteau Formation, Point Amour and Loup Bay, Labrador, Canada.
Holotype: 9329, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1960. *Ethmophyllum labradorensis*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.
Lower Cambrian: North America.

Metethmophyllum meeki (Walcott)

1886. *Ethmophyllum whitneyi*
Walcott, U. S. Geol. Surv. Bull. 30, pp. 81–84, pl. 4, figs. 1h, 1d and 1e.
Middle Cambrian: Silver Peak, Western Nevada.

1889. *Ethmophyllum Meeki*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889 [1890]. *Ethmophyllum meeki*
Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.
Lower Cambrian: Olenellus zone, Silver Peak, Nevada.
Type: 18358, National Museum, Washington, D. C.

1890. *Ethmophyllum meeki*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., pp. 601–602, pl. 55, figs. 2, 2a–c.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 18358, National Museum, Washington, D. C.
Remarks: Okulitch, 1943, p. 79, states that only fig. 2 can be regarded unequivocally as *E. meeki*.

1895. *Ethmophyllum Meeki*
Head, Palaezoic sponges of North America, p. 10.

1912. *Ethmophyllum meeki*
Willis, U. S. Geol. Surv., Prof. Paper 71, p. 99.
Lower Cambrian: Olenellus zone at Silver Peak, in western Nevada.

1943. *Metethmophyllum meeki*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 79, pl. 13, figs. 2, 3.
Lower Cambrian: Silver Peak, Nevada.
Cotypes: 18358, U. S. National Museum, Washington, D. C.

1955. *Metethmophyllum meeki*
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, p. E16, figs. 12, 5.
Lower Cambrian: North America

1960. *Ethmophyllum meeki*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.
Lower Cambrian: North America

1962. *Metethmophyllum meeki*
Vologdin, Osnovy paleontologii, p. 122.
Cambrian: Nevada

1964. *Metethmophyllum meeki*
Hill, Trans. Roy. Soc., New Zealand (Geol.), **2**, no. 9, p. 145.
Lower Cambrian: Silver Peak, Nevada.

1965. *Metethmophyllum meeki*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 121, fig. 22.18.
Lower Cambrian: Nevada
Cotypes: 18358 (originally 15307), U. S. National Museum, Washington, D. C.

Metethmophyllum resseri Okulitch, 1943

1938. *Archaeocyathus* sp.
Resser, Geol. Soc. Am., Spec. Papers, 15, pp. 36–37, pl. 2, fig. 28.
Lower Cambrian: Shady; near Quebec; five miles southeast of Marion, Virginia.
Referred specimen: 94736, U. S. National Museum, Washington, D. C.

1943. *Metethmophyllum resseri*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 80, pl. 14, fig. 1.
Lower Cambrian: Shady; near Quebec; five miles southeast of Marion, Virginia.
Holotype: 94736, National Museum, Washington, D. C.

MONOCYATHUS Bedford and Bedford, 1934

Monocyathus sp.

1958. *Monocyathus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Monocyathus* sp.
Greggs, Jour. Paleo., **33**, pl. 11, fig. 1.
Lower Cambrian: about 1 mile north of Colville, Stevens County, Washington.
Referred specimen: CL11d-22, Paleontology Collection, University of British Columbia, Vancouver (and 14320, Geol. Survey Canada, Ottawa), Canada.

1960. *Monocyathus* sp.
Easton, Invertebrate Paleontology, p. 119, fig. 3.9 (6).

NEVADACYATHUS Okulitch, 1943

Nevadacyathus septaporus (Okulitch)

1935. *Archaeocyathus septaporus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 101–102, pl. 1, fig. 4.
Lower Cambrian: at Silver Peak, Nevada.
Holotype: 9326, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1939. *Archaeocyathellus* (*Protocyathus*) *septapora*
Simon, Abhandl. Senck. nat. Ges., **448**, p. 19, pl. 1, fig. 12.

1943. *Nevadacyathus septaporus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 59–60, text-fig. 19.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9326, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1955. *Nevadacyathus septaporus*
Okulitch, Treatise on Invertebrate Paleontology, pt. E, Archaeocyatha, p. E10, fig. 8.10.
Lower Cambrian: Nevada

1960. *Nevadacyathus septaporus*
Easton, Invertebrate Paleontology, p. 119, fig. 3.9 (4).
Lower Cambrian: U.S.A.

1962. *Nevadacyathus septaporus*
Vologdin, Osnovy paleontologii, p. 119, fig. 64.
Lower Cambrian: North America

1965. *Nevadacyathus septaporus*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 65, text-fig. 14.14.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9326, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

Nevadacyathus sp.

1953. *Nevadacyathus* sp.
Shrock and Twenhofel, Principles of invertebrate paleontology, fig. 3-11A.
Lower Cambrian: Nevada

1960. *Nevadacyathus*
Clark and Stearn, The Geological Evolution of North America, fig. A-6.

PARACOSCINUS Bedford and Bedford, 1936

Paracoscinus sp.

1950. *Paracoscinus* sp.
Little, Geol. Surv. Canada, paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Paracoscinus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.
Cambrian: Lower part of the Laib Group, Salmo River, British Columbia, Canada.

Protocyathus rarum Ford, 1878
See: *Archaeocyathellus rarus* (Ford)

Protocyathus rarus Ford, 1878
See: *Archaeocyathellus rarus* (Ford)

PROTOPHARETRA Bornemann, 1884

Protopharetra dunbari Okulitch, 1943

1943. *Protopharetra dunbari*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 71–72, pl. 6, fig. 5; pl. 9, fig. 3.
Lower Cambrian: Forteau Formation of Point Amour and Taylor's Gulch, near Forteau Village, Labrador, Canada.
Cotypes: 17043, Peabody Museum, Yale University, New Haven, Connecticut, and 25642, Royal Ontario Museum, Toronto, Canada.

1953. *Protopharetra dunbari*
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Protopharetra dunbari*
Okulitch, Jour. Paleo., **28**, p. 295.

Lower Cambrian: Inyo County, California.
Referred specimens: Museum of Paleontology, University of California, Berkeley, California.

1958. *Protopharetra dunbari*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Protopharetra dunbari*
Greggs, Jour. Paleo., **33**, p. 69, pl. 12, figs. 4–5; pl. 14, fig. 1.
Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada; and Colville, Stevens County, Washington.
Referred specimens: CL7b-8, CL11a-6, SC-6, Paleontology Collection, University of British Columbia, Vancouver (and 14316, Geological Survey of Canada, Ottawa), Canada.

1960. *Protopharetra dunbari*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 295.
Lower Cambrian

Protopharetra raymondi Okulitch, 1935

1935. *Protopharetra raymondia*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 103, pl. 2, fig. 2.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9328, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Protopharetra raymondi*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 71, pl. 4, fig. 8; pl. 6, figs. 3, 4.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9328, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1953. *Protopharetra raymondi*
Shrock and Twenhofel, Principles of invertebrate paleontology, fig. 3-11F.
Lower Cambrian: Nevada.

1960. *Protopharetra raymondi*
Easton, Invertebrate paleontology, p. 119, fig. 3.9 (7).
Lower Cambrian: U.S.A.

1960. *Protopharetra raymondi*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 295.
Lower Cambrian

Protopharetra raymondia Okulitch, 1935
See: *Protopharetra raymondi* Okulitch, 1935

Protopharetra rootsi Okulitch and Roots, 1947

1947. *Protopharetra rootsi*
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Protopharetra rootsi*
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 42–43, pl. 1, fig. 7.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Holotype: Collection of Geological Survey of Canada, Ottawa, Canada.

1958. *Protopharetra rootsi*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Protopharetra sp.

1889. *Protopharetra* sp.?
Walcott, Am. Jour. Sci., **37**, p. 388.

1889 [1890]. *Protopharetra* sp.?
Walcott, Proc. U. S. Nat. Mus., **12**, p. 33.
Lower Cambrian: Silver Peak, Nevada.
Referred specimen: 15303, National Museum, Washington, D. C.

1890. *Protopharetra* sp.?
Walcott, 10th Ann. Rept., Geol. Surv., p. 599, pl. 51, figs. 1, 1a.

Lower Cambrian: Silver Peak, Nevada.
Type: 15303, National Museum, Washington, D. C.

1895. *Protopharetra* sp.
Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.
Lower Cambrian: Inyo County, California.

1902. *Protopharetra* sp.
Frech, Lethaea palaeozoica, p. 683.
Cambrian: California and Nevada.

1910. *Protopharetra* sp.
Walcott, Outlines of geologic history, pp. 31, 32.
Lower Cambrian: Silver Peak, Nevada.

1912. *Protopharetra* sp.
Willis, U. S. Geol. Surv., Prof. Paper 71, pp. 100, 101.
Lower Cambrian: Olenellus zone at Silver Peak in Western Nevada.

1934. *Protopharetra* sp.
Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.
Lower Cambrian: Forteau Formation, Forteau Bay, Labrador, Canada.

1935. *Protopharetra* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 106, pl. 2, fig. 5.
Lower Cambrian.

1943. *Protopharetra* sp.
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 10, 70–71, pl. 6, fig. 6.
Lower Cambrian: Silver Peak, Nevada and Forteau Formation of Point Amour and Taylor's Gulch, near Forteau Village, Labrador, Canada.

1947. *Protopharetra* sp.
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.
Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Protopharetra* sp.
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, p. 43, pl. 1, fig. 8.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Referred specimen: 12767 in the Collection of Geological Survey of Canada, Ottawa, Canada.

1950. *Protopharetra* sp.
Little, Geol. Surv. Canada, paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Protopharetra* sp.
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 33, pl. 9, fig. 1B.
Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1953. *Protopharetra* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Protopharetra* sp.
Okulitch, Univ. Nac. Autonoma Mexico Inst. Geol., Bull.58, p. 62, pl. 11, fig. 1B.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1954. *Protopharetra* sp.
Okulitch, Jour. Paleo., **28**, pp. 293, 295, 296.
Lower Cambrian: Inyo County, California.
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1956. *Protopharetra* sp.
Okulitch, 20th Int. Geol. Congress Mexico, Geol. paleont. region Caborca, norpon. Sonora, pt. 1, p. 62, pl. 11, fig. 1B.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1958. *Protopharetra* sp.
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 620.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

1959. *Protopharetra* sp.
Greggs, Jour. Paleo., **33**, p. 69, pl. 12, figs. 1–3.
Lower Cambrian: about 1 mile north of Colville, Washington, and Salmo area, British Columbia, Canada.
Referred specimens: CL20b-3, CL8a-4 and CL4b-2. Paleontology Collection, University of British Columbia, Vancouver (and 14324 in the Geological Survey of Canada, Ottawa), Canada.

PYCNOIDOCOSCINUS Bedford and Bedford, 1936

Pycnoidocoscinus rectiporus Okulitch, 1948

1948. *Pycnoidocoscinus rectiporus*
Okulitch, Jour. Paleo., **22**, pp. 348–349, pl. 55, figs. 2, 3.
Lower Cambrian: Donald Formation, south side of Holt Creek, Dogtooth Range, near Golden, British Columbia, Canada.
Holotype: 6 in Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocoscinus rectiporus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 619.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

PYCNOIDOCYATHUS Taylor, 1910

Pycnoidocyathus amourensis (Okulitch)

1943. *Cambrocyathus amourensis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 76, pl. 9, fig. 3; pl. 10, fig. 3; pl. 11, figs. 1–3; pl. 18, fig. 1b.

Lower Cambrian: Forteau Formation, Point Amour and Taylor's Gulch, Labrador, Canada.
Cotypes: 17041 and 17042, Peabody Museum, Yale University, New Haven, Connecticut, and 25638, Royal Ontario Museum, Toronto, Canada.

1946. *Cambrocyathus amourensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4, pp. 74, 85, pl. 1, figs. A, B; pl. 2, pl. 3, pl. 6, figs. 4, 6, 7.
Cambrian: Labrador, Canada.

1946. *Cambrocyathus amourensis*
Okulitch, Jour. Paleo., **20**, pp. 275–276, pl. 41, figs. 1, 2.
Lower Cambrian: Point Amour, Labrador, Canada.
Referred specimen: 25643, Peabody Museum, Yale University, New Haven, Connecticut. Thin section 67, Royal Ontario Museum of Paleontology, Toronto, Canada.

1950. *Pycnoidocyathus amourensis*
Okulitch, Jour. Paleo., **24**, p. 394.

1950. *Cambrocyathus amourensis*
Little, Canada Geol. Survey, paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Pycnoidocyathus amourensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 58, pl. 2, fig. 8.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12366, Geological Survey of Canada, Ottawa, Canada.

1957. *Pycnoidocyathus amourensis*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 923–924, pl. 112, fig. 1.
Lower Cambrian: 1 mile due NE of northeast end of Crescent Lake, lat. 60°12′30″, long. 131°11′30″, Wolf Lake area, Yukon, Canada.
Referred specimen: 13341, Geological Survey of Canada, Ottawa, Canada.

1958. *Pycnoidocyathus amourensis*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 621.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1959. *Pycnoidocyathus amourensis*
Greggs, Jour. Paleo., **33**, p. 70, pl. 13, figs. 9, 10.
Lower Cambrian: Colville, Stevens County, Washington; and at Salmo River at the base of Laib Group, British Columbia, Canada.
Referred specimens: CL11e-6 and CL11b-1, Paleontology Collection, University of British Columbia, Vancouver, Canada.

Pycnoidocyathus (*Archaeocyathus*) *profundus* (Billings)
See: *Pycnoidocyathus profundus* (Billings)

Pycnoidocyathus (*Cambrocyathus*) sp.
See: *Pycnoidocyathus* sp.

Pycnoidocyathus ceratodictyoides (Raymond)

1931. *Ethmophyllum ceratodictyoides*
Raymond, Bull. Mus. Comp. Zool., **55**, no. 6, pp. 176–177; pl. 2, figs. 1, 2.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9298 in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1935. *Ethmophyllum ceratodictyoides*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 100.
Lower Cambrian: Silver Peak, Nevada.

1943. *Cambrocyathus ceratodictyoides*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 74–75, pl. 9, figs. 1, 2.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9298, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1950. *Pycnoidocyathus ceratodictyoides*
Okulitch, Jour. Paleo., **24**, p. 394.

1960. *Ethmophyllum ceratodictyoides*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.
Lower Cambrian: North America.

Pycnoidocyathus columbianus (Okulitch)

1943. *Cambrocyathus columbianus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 78, pl. 12, fig. 3; pl. 13, fig. 1.
Lower Cambrian: Canadian Rocky Mountains; Donald Formation, Dogtooth Range, Canyon Creek, near Golden, British Columbia, Canada.
Holotype: 108104; paratype: 108105, U. S. National Museum, Washington, D. C.
Other specimens: 9518, 9519, with Geological Survey of Canada, Ottawa, Canada.

1948. *Cambrocyathus columbianus*
Okulitch, Jour. Paleo., **22**, p. 346, pl. 54, fig. 6.
Lower Cambrian: Donald Formation, Canyon Creek, near Golden, British Columbia, Canada.
Cotypes: 9518 and 9519, Geological Survey of Canada, Ottawa, Canada.

1950. *Pycnoidocyathus columbianus*
Okulitch, Jour. Paleo., **24**, p. 394.

1950. *Cambrocyathus columbianus*
Little, Canada Geol. Surv., paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Pycnoidocyathus columbianus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 58–59, pl. 2, figs. 4–6.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimens: 12362, 12369, in the Geological Survey of Canada, Ottawa, Canada.

1957. *Pycnoidocyathus columbianus*
Kawase and Okulitch, Jour. Paleo., **31**, p. 924, pl. 112, fig. 2.
Cambrian: Wolf Lake area, Yukon Territory, Canada.
Referred specimens: AP-22 and 23, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocyathus columbianus*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 621, 622.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

1959. *Pycnoidocyathus columbianus*
Greggs, Jour. Paleo., **33**, pp. 69–70, pl. 12, fig. 12.
Cambrian: Colville, Stevens County, Washington.
Referred specimens: CL11a-11. Paleontology Collection, University of British Columbia, Vancouver, Canada.

Pycnoidocyathus cf. *columbianus* (Okulitch)

1959. *Pycnoidocyathus* sp. cf. *P. columbianus*
Greggs, Jour. Paleo., **33**, pp. 69–70, pl. 13, figs. 12, 14.
Cambrian: Colville, Stevens County, Washington.
Referred specimens: CL12a-2, CL11c-7, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.

Pycnoidocyathus dissepimentalis (Okulitch)

1943. *Cambrocyathus dissepimentalis*
Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 77–78, pl. 11, fig. 4.
Lower Cambrian: Forteau Formation, Anse au Loup, Labrador, Canada.
Holotype: 108103, U. S. National Museum, Washington, D. C.

1950. *Pycnoidocyathus dissepimentalis*
Okulitch, Jour. Paleo., **24**, p. 394.

Pycnoidocyathus cf. *dissepimentalis* (Okulitch)

1957. *Pycnoidocyathus* cf. *P. dissepimentalis*
Kawase and Okulitch, Jour. Paleo., **31**, p. 925, pl. 112, fig. 7.

Cambrian: Wolf Lake area, Yukon Territory, Canada.
Referred specimens: AP-23 and 24, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocyathus* cf. *dissepimentalis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

Pycnoidocyathus donaldi (Okulitch)

1948. *Cambrocyathus donaldi*
Okulitch, Jour. Paleo., **22**, pp. 345–346, pl. 54, figs. 3–5.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.
Cotypes: 2 and 4, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Pycnoidocyathus donaldi*
Okulitch, Jour. Paleo., **24**, p. 394.

1958. *Pycnoidocyathus donaldi*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Pycnoidocyathus cf. *donaldi* (Okulitch)

1950. *Cambrocyathus* cf. *donaldi*
Little, Canada Geol. Surv., paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Pycnoidocyathus* cf. *donaldi*
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Pycnoidocyathus loupensis (Okulitch)

1889. *Archoeocyathus profundus*
Hinde, Quart. Jour. Geol. Soc., London, **45**, pp. 131–133, pl. 5, fig. 2.
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

Type specimen: 366 in the Geological Survey of Canada, Ottawa, Canada.

1940. *Cambrocyathus loupensis*
Okulitch, Proc. Roy. Soc. Canada, ser. 3 (abst.), **34**, p. 159.
Cambrian: L'Anse au Loup, Labrador, Canada.

1940. *Cambrocyathus loupensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 82–83, pl. 1, fig. 4.
Lower Cambrian: L'Anse au Loup, Labrador, Canada.
Holotype: 366, Geological Survey of Canada, Ottawa, Canada.

1943. *Cambrocyathus loupensis*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 74, pl. 8, fig. 6.
Lower Cambrian: L'Anse au Loup, Labrador, Canada.
Holotype: 366, Geological Survey of Canada, Ottawa, Canada.

1950. *Pycnoidocyathus loupensis*
Okulitch, Jour. Paleo., **24**, p. 394.

Pycnoidocyathus occidentalis (Okulitch)

1943. *Cambrocyathus occidentalis*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 75–76, pl. 10, figs. 1, 2.
Lower Cambrian: Silver Peak, Nevada.
Holotype: 9358, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1950. *Pycnoidocyathus occidentalis*
Okulitch, Jour. Paleo., **24**, p. 394.

1952. *Pycnoidocyathus occidentalis*
Moore *et al.*, Invertebrate fossils, fig. 3-11(4).
Lower Cambrian: Nevada.

1958. *Pycnoidocyathus occidentalis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1960. *Cambrocyathus occidentalis*
Easton, Invertebrate fossils, p. 119, fig. 3.9(9).
Lower Cambrian: U.S.A.

Pycnoidocyathus cf. *occidentalis* (Okulitch)

1952. *Cambrocyathus* cf. *C. occidentalis*
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 33, pl. 9, fig. 3.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1954. *Cambrocyathus* cf. *C. occidentalis*
Okulitch, Univ. Nac. Autonoma Mexico Bull. no. 58, p. 63, pl. 11, fig. 3.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1956. *Cambrocyathus* cf. *C. occidentalis*
Okulitch, 20th Int. Geol. Congress, Mexico geol. paleont. region Caborca norpon. Sonora, pt. 1, p. 63, pl. 11, fig. 3.
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.
Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1957. *Pycnoidocyathus* cf. *P. occidentalis*
Kawase and Okulitch, Jour. Paleo., **31**, pp. 924–925, pl. 112, figs. 3–6.
Lower Cambrian: (Lord's Group B sediments), Wolf Lake area, Yukon, Canada.
Referred specimens: 13342–13345, Geological Survey of Canada, Ottawa, Canada.

Pycnoidocyathus orthoconicus (Okulitch)

1943. *Cambrocyathus orthoconicus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 77, pl. 12, figs. 1, 2.
Lower Cambrian: Forteau Formation, Anse au Loup, Labrador, Canada.
Holotype: 108102, U. S. National Museum, Washington, D. C.

Pycnoidocyathus profundus (Billings)

1865. *Archeocyathus profundus*
Billings, Palaeozoic Fossils, Geol. Surv. Canada, **1**, pp. 3–5, 59, 354, 356, 419, text figs. 1–4.
Lower Cambrian: (Forteau Formation), [Potsdam of Billings], L'Anse au Loup, Straits of Belle Isle, Labrador, Canada. Also Potsdam Group in Vermont.
Types: 341, a; in the Geological Survey of Canada, Ottawa, Canada.

1877. *Archeocyathus profundus*
Miller, The American palaeozoic fossils, p. 42.
Cambrian: Potsdam Group of Miller.

1880. *Archaeocyathus profundus*
Roemer, Lethaea palaeozoica I, Theil, pp. 299–300.
Cambrian: "Potsdam group," Anse au Loup, Belle Isle, Newfoundland, Labrador, Canada.

1884. *Archaeocyathus profundus*
Bornemann, Z. dtsch. Geol. Ges., **36**, p. 702.

1886. *Ethmophyllum profundum*
Walcott, U. S. Geol. Surv. Bull. no. 30, pp. 50–51, 78, 79, 83, 84, 85, pl. 1, figs. 1a–c; pl. 2, figs. 3, 3a, b; pl. 4, fig. 3.
Middle Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

1887. *Ethmophyllum profundum*
Walcott, Am. Jour. Sci., ser. 3, **34**, no. 200, art. 18, pp. 145–146.

1889. *Erimophyllum profundum*
Lesley, A dictionary of the fossils of Pennsylvania, **1**, p. 226, figs. 1, 1a, 1c and 1d.

1889. *Ethmophyllum profundum*
Lesley, A dictionary of the fossils of Pennsylvania, **1**, p. 227, figs. 3, 3a and 3b on p. 227.
Lower Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

1889. *Archaeocyathus profundus*
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Archoeocyathus profundus*
Nicholson and Lydekker, A Manual of paloeontology, ser. 3, pp. 183–184, figs. 72 A, B.
Lower Cambrian: Straits of Belle Isle, Labrador, Canada.

1889. *Archaeocyathus profundus*
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 126, 127, 129–133, pl. 5, figs. 1–5.
Cambrian: Anse au Loup, Labrador, Canada.
Referred specimens: in Museum of McGill College, Montreal, and Geological Survey of Canada, Ottawa, Canada.

1889. *Archaeocyathus profundus*
Hinde, Canadian Rec. Sci., **3**, no. 6, p. 373.

1889. *Ethmophyllum profundum*
Miller, North American geology and palaeontology, pp. 159–160, text-figs. 105, 106.
Cambrian: [Upper Taconic of Miller]

1890. *Archaeocyathus profundus*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 600, pl. 52, figs. 1, 1a–c; pl. 53, figs. 1, 1a–b; pl. 54, fig. 3.
Lower Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.
Referred specimen: 15304, National Museum, Washington, D. C.

1890. *Ethmophyllum profundum*
Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Archoeocyathus profundus*
Walcott, U. S. Geol. Surv. Bull. no. 81, pp. 79, 319.
Cambrian: north side of the straits of Belle Isle on the Labrador shore, at L'Anse au Loup, Canada.
Also: Silver Peak, Nevada.

1891. *Archaeocyathus profundus*
Bornemann, Nova Acta der Ksl. Leop.-Carol., Deutschen Akad. der Naturforscher, Bd. 56, no. 3, pp. 495–499.

1895. *Archoeocyathus profundus*
James, The American naturalist, **29**, p. 980, fig. 4.
Cambrian: North America.

1895. *Ethmophyllum profundum*
Head, Palaeozoic sponges of North America, pp. 7, 10.

1895. *Archoeocyathus profundus*
Dana, Manual of geology, 4th ed., p. 470, fig. 507.
Lower Cambrian.

1910. *Archoeocyathus profundus*
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 61, 64, 127, 135, 165.
Cambrian: Anse au Loup, on the straits of Belle Isle, Labrador, Canada.

1920. *Archaeocyathus profundus*
Gordon, Trans. Roy. Soc. Edinburgh, **52**, pp. 687, 707.

1921. *Ethmophyllum profundum*
Grabau, A textbook of geology, part II, historical geology, p. 227, fig. 1010.
Cambrian.

1924. *Archoeocyathus profundus*
Schuchert, A textbook of geology, part II, historical geology, 2nd ed., p. 189, pl. 4, fig. 6.
Lower Cambrian.

1931. *Archaeocyathus profundus*
Raymond, Bull. Mus. Comp Zool., **55**, pp. 175, 177.

1933. *Archoeocyathus profundus*
Schuchert and Dunbar, A textbook of geology, p. 135, pl. 5, fig. 15.

1934. *Archoeocyathus profundus*
Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.
Lower Cambrian: Forteau Formation, Forteau Bay, Labrador, Canada.

1935. *Archaeocyathus profundus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 99.
Lower Cambrian: Labrador, Canada and Nevada.

1937. *Archaeocyathus profundus*
Ting, Neus. Jahrb. Mineral., **78**, pp. 331, 357, 358.

1937. *Ethmophyllum profundus*
Okulitch, Proc. Geol. Soc. Am., p. 358.

1937. *Archaeocyathus profundus*
Vologdin, Problems of paleontology, pp. 453, 481.

Cambrian: Labrador, Canada.

1937. *Cambrocyathus profundus*
Okulitch, Jour. Paleo., **11**, pp. 251–252.

1937. *Archaeocyathus profundus*
Bedford and Bedford, Kyancutta Mus. Mem. no. 4, pp. 28, 33.
Cambrian: Canada.

1939. *Archaeocyathellus profundus*
Simon, Abhandl. Senck. nat. Ges., **448**, pp. 19, 23–24, pl. 1, fig. 11.

1939. *"Archaeocyathus profundus"*
Bedford and Bedford, Kyancutta Mus. Mem. no. 6, pp. 71, 78, 80, pl. 52, fig. 210.
Cambrian: Anse au Loup, Canada.

1940. *Archaeocyathus profundus*
Vologdin, Atlas of the leading forms of the fossil fauna of the U.S.S.R., p. 52.
Lower Cambrian: Labrador, Canada.

1940. *Cambrocyathus profundus*
Okulitch, Proc. Roy. Soc. Canada, ser. 3, **34**, p. 159 (abstr.)

1940. *Cambrocyathus* cf. *profundus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 78–82, pl. 2, figs. 1, 2; pl. 3, figs. 1–3.
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.
Holotype: 341 and referred specimens: 373d, 373m, Geological Survey of Canada, Ottawa, Canada.

1940. *Cambrocyathus profundus*
Chi, Bull. Geol. Soc. China, **20**, pp. 123, 129, 130.

1943. *Cambrocyathus profundus*
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 72–73, pl. 6, fig. 7; pl. 7, figs. 1, 2; pl. 8, figs. 1–5; pl. 9, fig. 3; pl. 18, a.
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.
Referred specimens: 341 and 373m, Geological Survey of Canada, Ottawa, Canada, and 15304, U. S. National Museum, Washington, D. C.

1944. *Cambrocyathus profundus*
Shimer and Shrock, Index fossils of North America, p. 57, pl. 17, figs. 22, 23.
Lower Cambrian: Labrador, Canada.

1946. *Cambrocyathus profundus*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4, pp. 74, 85, pl. 4; pl. 7, figs. 1A, 1B, 2, 4.
Cambrian: Labrador, Canada.

1949. *Cambrocyathus profundus*
Dunbar, Historical geology, pl. 2, fig. 15.
Cambrian.

1950. *Pycnoidocyathus* (*Archaeocyathus*) *profundus*
Okulitch, Jour. Paleo., **24**, pp. 393–394.
Types: 341, 341a, 373, 373a, d, e, f, m., Geological Survey of Canada, Ottawa, Canada.

1955. *Archaeocyathus profundus*
Neaverson, Stratigraphical palaeontology, p. 158.
Cambrian: Forteau Formation, Western Newfoundland Reef, Canada.

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Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 280–285.
Lower Cambrian: North America.

1965. *Cambrocyathus profundus*
Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 120.
Lower Cambrian: North America.
Lectotype: 341, Geological Survey of Canada, Ottawa, Canada.

Pycnoidocyathus septimus (Okulitch)

1948. *?Cambrocyathus septimus*
Okulitch, Jour. Paleo., **22**, pp. 346–347, pl. 53, fig. 9.
Lower Cambrian: Donald Formation, south side of Holt Creek, Dogtooth Range, British Columbia, Canada.
Holotype: 10 in Okulitch Collection at the University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocyathus septimus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 619.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Pycnoidocyathus solidus Kawase and Okulitch, 1957

1957. *Pycnoidocyathus solidus*
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 925–926, pl. 112, figs. 8, 9.
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3′, long. 130°21′, Wolf Lake area, Yukon, Canada.
Holotype: 13346, Geological Survey of Canada, Ottawa, Canada.

1958. *Pycnoidocyathus solidus*
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

Pycnoidocyathus sp.

1947. *Cambrocyathus* sp.
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 43–44, pl. 1, fig. 9.
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.
Referred specimens: 12768 in the Collection of Geological Survey of Canada, Ottawa, Canada.

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Okulitch, Jour. Paleo., **22**, p. 346, pl. 54, fig. 7.
Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Range, British Columbia, Canada.

1950. *Cambrocyathus* sp.
Little, Canada Geol. Surv., paper 50-19, p. 18.
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Pycnoidocyathus* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1953. *Cambrocyathus* sp.
Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3–11B–E.
Lower Cambrian: Labrador, Canada.

1954. *Pycnoidocyathus* (*Cambrocyathus*) sp.
Okulitch, Jour. Paleo., **28**, p. 294.
Lower Cambrian: Inyo County, California.
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1958. *Pycnoidocyathus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 620.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

1959. *Pycnoidocyathus* sp.
Greggs, Jour. Paleo., **33**, pp. 70–71, pl. 12, fig. 13.
Lower Cambrian: Colville, Stevens County, Washington.
Referred specimen: CO17b-6, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.

1960. *Pycnoidocyathus*
Clark and Stearn, The Geological Evolution of North America, fig. 15-10.

Robustocyathus argentus (Okulitch)
See: *Ajacicyathus argentus* (Okulitch)

Robustocyathus weeksi (Okulitch)
See: *Ajacicyathus weeksi* Okulitch, 1943

Spirocyathus atlanticus (Billings)
See: *Archaeocyathus atlanticus* Billings, 1861

Spirocyathus cf. *atlanticus* (Billings)
See: *Archaeocyathus* cf. *atlanticus* Billings, 1861

Spirocyathus constrictus Raymond, 1931
See: *Archaeocyathus constrictus* (Raymond)

SYRINGOCNEMA Taylor, 1910

Syringocnema colvillensis Greggs, 1959

1958. *Syringocnema colvillensis*
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.
Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Syringocnema colvillensis*
Greggs, Jour. Paleo., **33**, pp. 72–73, pl. 13, figs. 5, 6.
Lower Cambrian: Old Dominion Formation, about 1 mile north of Colville, Stevens County, Washington.
Holotype: CL2a-1, Paleontology Collection, University of British Columbia, Vancouver; and 14317, Geological Survey of Canada, Ottawa, Canada. Other specimens: CO18b-1, Paleontology Collection, University of British Columbia, Vancouver; and 14318, Geological Survey of Canada, Ottawa, Canada.

Syringocnema sp.

1952. *Syringocnema*? sp.
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 33–34, pl. 8, figs. 1, 2; pl. 9, figs. 6, 7.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.
Referred specimens: 111817 a, b, U. S. National Museum, Washington, D. C.

1954. *Syringocnema*?
Okulitch, Univ. Nac. Autonoma, Mexico Bull. no. 58, pp. 63–64, pl. 10, figs. 1, 2; pl. 11, figs. 6, 7.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.
Referred specimens: 111817, a, b, U. S. National Museum, Washington, D. C.

1956. *Syrincocnema*?
Okulitch, 20th Int. Geol. Congress, Mexico Geol. paleontregion Caborca, norpon. Sonora, pt. 1, pp. 63–64, pl. 10, figs. 1, 2; pl. 11, figs. 6, 7.
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.
Referred specimens: 111817 a, b, U. S. National Museum, Washington, D. C.

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Syringocyathus canadensis Okulitch, 1955

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Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Syringocyathus canadensis*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 63, pl. 2, fig. 7.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Holotype: 12356, Geological Survey of Canada, Ottawa, Canada.

1958. *Syringocyathus canadensis*
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 621.
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Syringocyathus canadensis*
Greggs, Jour. Paleo., **33**, pp. 73–74.
Cambrian: south fork of Salmo River, British Columbia, Canada.

Syringocyathus inyoensis Okulitch, 1954

1953. *Syringocyathus* sp.
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.
Lower Cambrian: Inyo County, California.

1954. *Syringocyathus inyoensis*
Okulitch, Jour. Paleo., **28**, p. 294, pl. 28, figs. 4, 5.
Lower Cambrian: Inyo County, California.
Holotype: 32961b, other specimen: 32961a, Museum of Paleontology, University of California, Berkeley, California.

Syringocyathus sp.

1959. *Syringocyathus* sp.
Greggs, Jour. Paleo., **33**, p. 74, pl. 13, fig. 13.
Lower Cambrian: about 1 mile north of Colville, Stevens County, Washington.
Referred specimen: CL20e-2, Paleontology Collection, University of British Columbia, Vancouver (and 14322, Geological Survey of Canada, Ottawa), Canada.

Also see: *Syringocyathus inyoensis* Okulitch, 1954

THALAMOCYATHUS Gordon, 1920

Thalamocyathus sp.

1955. *Thalamocyathus* sp.
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 50, 51, pl. 3, fig. 2.
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.
Referred specimen: 12365, Geological Survey of Canada, Ottawa, Canada.

1958. *Thalamocyathus* sp.
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.
Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Wilbernicyathus donegani Wilson, 1950
See: *Incertae sedis*

INCERTAE SEDIS

Genera and Species of Uncertain Affinities

1960. *Archaeocyathellus atreus*
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.
Lower Cambrian: North America.

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Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 106, pl. 2, figs. 1a–f, text-fig. 2.

1945. *Archaeocyathid*
McKee, Carnegie Inst. Wash. Publ. no. 563, p. 88.
Cambrian: Fossil Rapids section, Grand Canyon.

1945. *Archaeocyathid*
Resser, Carnegie Inst. Wash. Publ. no. 563, p. 176, pl. 26, fig. 1.
Cambrian: Grand Canyon, Fossil Rapids.

1935. *Archaeocyathina*
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 79, text-fig. 1.
Lower Cambrian: Silver Peak, Nevada.

1917. *Archaeocyathus* (*Archaeocyathellus*) *atreus*
Walcott, Smithsonian Misc. Coll., **67**, no. 3, p. 67, pl. 8, figs. 2, 2a.
Lower Cambrian: Mount Whyte Formation; oolitic limestone about 400 feet below summit of ridge above Gog Lake, below Wonder Pass on Continental Divide, in British Columbia, 19 miles southwest of Banff, Alberta, Canada.

1943. *Archaeocyathus* (*Archaeocyathellus*) *atreus*
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 64, pl. 3, fig. 14.
Lower Cambrian: Mount Whyte Formation, 19 miles southwest of Banff, Alberta, Canada.
Holotype: 64352, U. S. National Museum, Washington, D. C.

1928. *Archaeocyathus atreus*
Walcott, Smithsonian Misc. Coll., **75**, no. 5, p. 297.
Lower Cambrian: Mount Whyte Formation. Mount Assiniboine Region, Southern Canadian Rocky Mountains, Canada.

1955. *Archaeocyathus atreus*
Neaverson, Stratigraphical palaeontology, p. 158.
Cambrian: Mount Whyte Beds of British Columbia, Canada.

1924. *Archaeocyathus* sp.
Sardeson, Pan-Am. Geol., **41**, pp. 9, 10, fig. 2.
Early Cambrian.

1937. *Archaeocyathus*? sp.
Mertie, U. S. Geol. Surv. Bull. no. 872, p. 79.
Middle Cambrian: north of Yukon River, near international boundary, Alaska.

1937. "*Archaeocyathus*" sp.
Mertie, U. S. Geol. Surv. Bull. no. 872 p. 79.
Middle Cambrian: north of Yukon River, near international boundary, Alaska.

1885. *Archeocyathus*
Hyatt, Science, **6**, p. 386.

1912. *Atikokania irregularis*
Walcott, Geol. Surv. Canada, App. Memoir no. 28, p. 6, pl. 2, fig. 1.
Pre-Cambrian?: limestone of Steeprock Series, Steeprock Lake, west-northwest of Lake Superior, Ontario, Canada.
Types: 58317, U. S. National Museum, Washington, D. C.; and 8059d, Geological Survey of Canada, Ottawa, Canada.

1912. *Atikokania lawsoni*
Walcott, Geol. Survey Canada, App. Memoir no. 28, pp. 5–6, pl. 1, figs. 1–5; pl. 2, fig. 2.
Pre-Cambrian?: limestone of Steeprock Series, Steeprock Lake, west-northwest of Lake Superior, Ontario, Canada.
Types: 58313–58316, U. S. National Museum, Washington, D. C.; and 8059a–e, Geological Survey of Canada, Ottawa, Canada.

1939. *Atikokania lawsoni*
Simon, Abhandl. Senck. nat. Ges., **448**, p. 22.

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Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 141.
?Archaean: Steeprock Series, Steeprock Lake, from west-northwest of Lake Superior, Canada.

1890. *Ethmophyllum*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 53, fig. 3.
Lower Cambrian: Silver Peak, Western Nevada.

1886. *Ethmophyllum whitneyi*
Walcott, U. S. Geol. Surv. Bull. no. 30, pp. 81–84, pl. 4, figs. 1a, 1f and 1g.
Middle Cambrian: Silver Peak, Western Nevada.

1890. *Ethmophyllum whitneyi*
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 55, figs. 1a, 1d, 1e.
Lower Cambrian: Silver Peak, Western Nevada.
Type: 15307, National Museum, Washington, D. C.

1899. *Haguia sphaerica*
Walcott, Mono., U. S. Geol. Surv., **32**, pt. 2, pp. 442–443, pl. 63, figs. 6, 6a.
Middle Cambrian: Flathead Formation, Yellowstone National Park.

1920. *Haguia sphaerica*
Walcott, Smithsonian Misc. Coll., **67**, no. 6, p. 264.
Upper Cambrian.

1950. *Wilbernicyathus donegani*
Wilson, Jour. Paleo., **24**, pp. 591–593, pl. 80, figs. 1–7, text-fig. 1.
Upper Cambrian: Wilbers Formation, Camp San Saba, 11 miles south of Brady, McCulloch County, Texas.

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